

THE POTENTIAL OF THE DISCARDED:  
CREATING AFFORDABLE HOUSING FROM A VACANT MODERN COMPLEX

by

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## ABSTRACT

The Campanile Campus, otherwise known as the Federal Study Centre, was first used as a religious educational centre and then as a federal language training facility. Today, the federally-recognized modern heritage complex is currently abandoned and awaiting a new purpose. This thesis synthesizes and combines the objectives of architectural conservation, adaptive reuse, and affordable housing to create a new phase for the campus in an effort to prevent its obsolescence. These issues inform a design strategy which proposes the campus be repurposed as a community hub and adaptable neighbourhood that offers a variety of housing types which allows residents to remain in the community they have created. Specifically, the design focuses on the sensitive adaptation of heritage buildings while catering to the

surrounding neighbourhood by addressing issues of affordability, density, diversity, and urban infill.



Figure 1: Quad Folly of the Federal Study Centre

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Thank you to Christian Ouimet and everyone at Heritage Conservation Services for providing all of the documentation that allowed this thesis to progress further than I could have ever managed on my own.

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## INTRODUCTION AND OBJECTIVES

This thesis is heavily influenced by my undergraduate educational background in architectural conservation and sustainability. As an undergraduate student I was taught that there was another option for designing, and it started with an existing building. Each design studio was centred around an existing building, with an existing community, and a real design problem the community was facing. It made me realize the potential of an existing building and the unique challenges they face.

In the next decade, the Canadian Federal Government wants to put forth \$11.2 billion into affordable housing as stated in their 2017 budget.<sup>1</sup> As part of this plan they have decided to

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<sup>1</sup> Steve Pomeroy, "Distilling the Tea Leaves: What the 2017 Federal Budget Really Means For Housing, publication, Centre for Urban Research and Education, Carleton University, March 2017, accessed October 12, 2017,

use surplus federal land and buildings as sites for future public housing developments. This thesis will apply the government's proposal to the adaptive reuse of the Federal Study Centre located at 1495 Heron Road in Ottawa as an exploration of what could be achieved during the coming decade. The Federal Study Centre includes recognized federal heritage buildings under the Federal Heritage Buildings Review Office (FHBRO) and has recently been decommissioned as a government language training facility. Originally known as The Sisters of the Congregation of Notre-Dame, or the Campanile Campus, the site was first built in 1965 as a religious

<https://carleton.ca/cure/wp-content/uploads/CURE-Brief-Federal-Budget-2017.pdf>, 1.

educational campus.<sup>2</sup> The campus was run by the Sisters of the Congregation of Notre Dame and held facilities for both a girl's and a boy's high school. The campus was bought in the early 1970's by the federal government and was turned into the Federal Study Centre with minimal alterations.<sup>3</sup> Since the site has already been adapted once for the government, it makes the complex an ideal candidate for an adaptive reuse project. Its previous adaptation proves that the configuration of the site can easily be converted to suit a new need.

Combining the federal housing plan with the site's vacant state, this thesis will deal with the adaptive reuse of the existing Federal Study Centre into affordable housing and community amenities. The City of Ottawa is currently in a time

where housing vacancies are few, and the need for housing that is affordable and accessible continues to rise. Proposing housing on the site is further justified by the original programming and infrastructure of the former Campanile Complex which was originally designed to include dormitories for the students and nuns. As the site consists of 7 hectares of land with 12 existing buildings, an overall planning strategy will be created to best utilize the existing buildings while interpreting for additional structures. The planning strategy proposes to incorporate new programs onto the site that concentrate on helping the surrounding community. The thesis will focus in on a few of the buildings, existing and new, as a design case study for housing and community programs.

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<sup>2</sup> "Pavilion A," Canada's Historic Places. Accessed October 03, 2017, <http://www.historicplaces.ca/en/rep-reg/place-lieu.aspx?id=13968>.

<sup>3</sup> Ibid.



Figure 2: Aerial view of the existing Federal Study Centre (Google Maps)

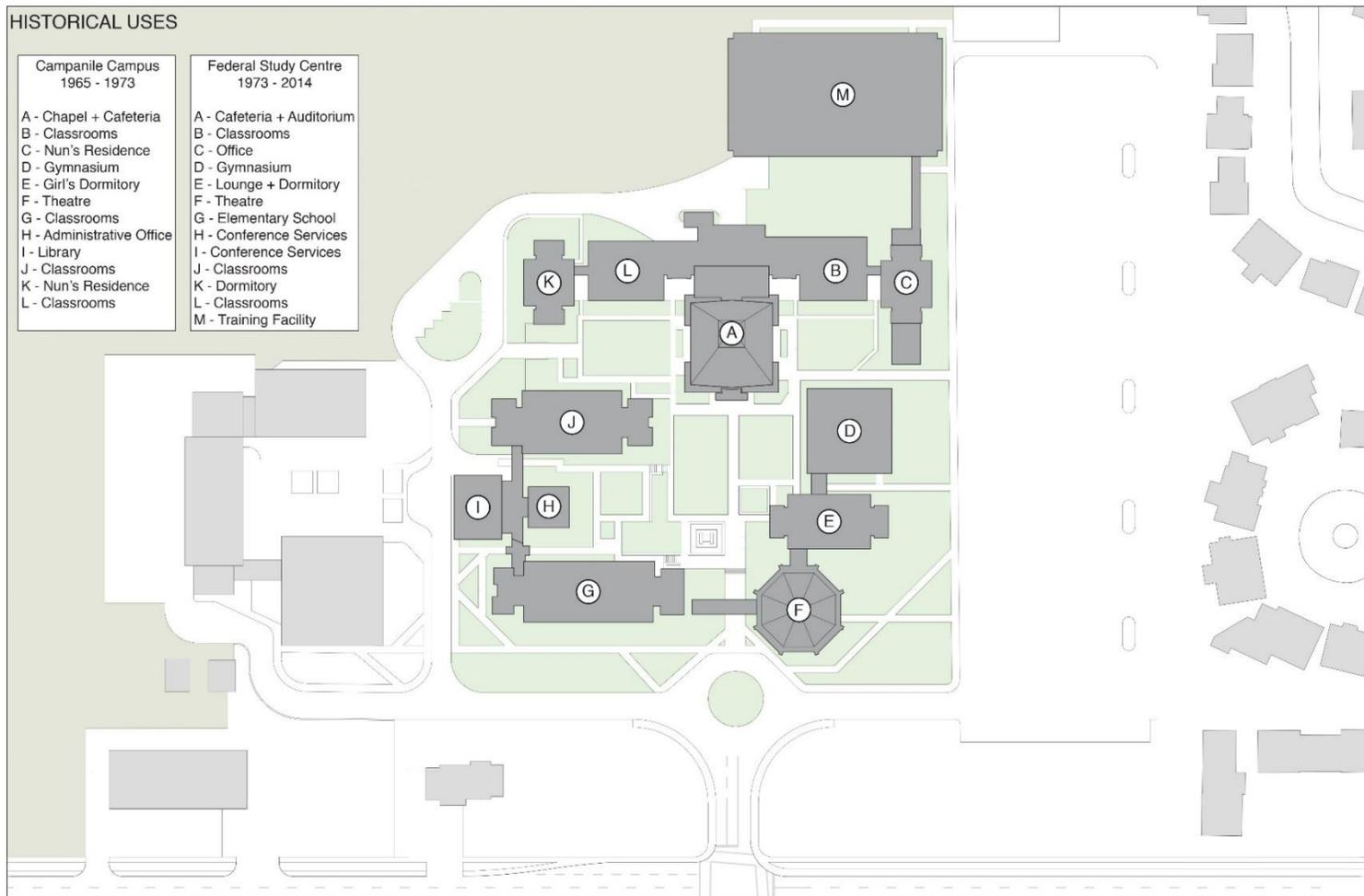


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## THESIS QUESTION

How can the revitalization of neglected buildings help to address social, urban, and sustainable issues in the city?

Can affordable housing be combined with architectural conservation and adaptive reuse to create an integrated solution?

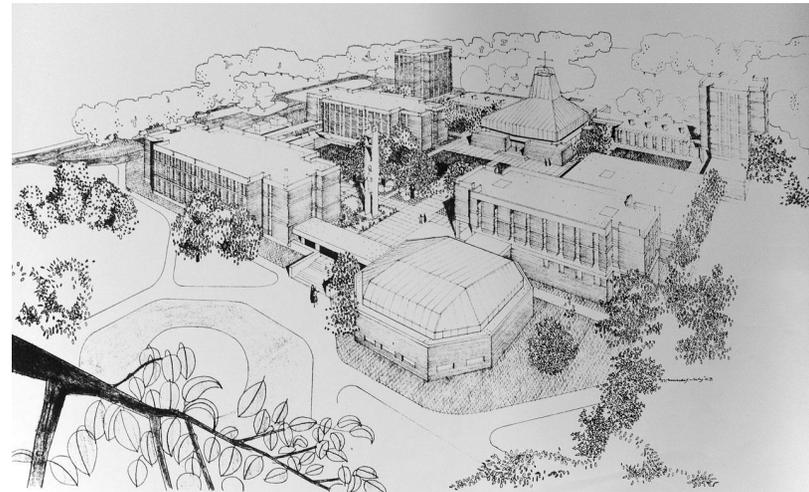


Figure 4: Hand-drawn perspective of the Campanile Campus by Tim Murray

## OBJECTIVES

The objective of this thesis is to explore the potential that an adaptive reuse design strategy has in addressing social, urban, and sustainable issues. This objective will be examined through the design case study of adapting the Ottawa Federal Study Centre into a community hub with housing and neighbourhood amenities. These objectives will be met through the following components:

- An understanding of heritage conservation and adaptive reuse theory and regulations
- An understanding of affordable housing in a Canadian context
- Precedent analysis of existing projects that will inform the design
- An analysis of the chosen case study site and its surrounding context
- A design that illustrates how adaptive reuse can help address social, urban, and sustainable issues while being sympathetic towards existing buildings

## METHODOLOGY

This thesis aims to answer its questions using a case study method where the answers will be explored through a proposed design intervention. The hypothetical adaptive reuse of the Federal Study Centre will serve to answer if neglected buildings can help to address social, urban, and sustainable issues within Ottawa. It will also explore whether affordable housing and adaptive reuse can create an ideal solution for the current housing shortage that Ottawa faces. The following process was used to arrive at a potential answer to the thesis question:



Figure 5: Thesis methodology

The root concept for this thesis was formed from two main pieces of information. The first piece stemmed from an initial interest in researching vacant buildings in Ottawa, whether they posed a problem, and what could be done about them. The next piece of information was taken from an Ottawa Sun news article published in March 2017. The article discussed the new 2017 federal budget, the investment the government plans to make towards a National Housing Strategy, and how this could be done by using surplus federal lands and buildings.<sup>4</sup> When looking at the beginning of the research for vacant buildings and the 2017 federal budget strategy, the question of “can this be done?” became most prominent.

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<sup>4</sup> Jon Willing, "Ottawa dished out \$17 million worth of municipal tax breaks for vacant commercial properties," Ottawa Sun, April 26, 2017, accessed August 30, 2017, <http://ottawasun.com/2017/04/26/ottawa-dished-out-17->

What then became the best way to answer this question of “can this be done?” was the adoption of a case study method. The case study method would apply the proposed strategy of using surplus federal buildings as sites for housing development to an applicable site in order to verify the success or failure of the method. This led to the selection of the Federal Study Centre as the proposed case study site that met the requirements for this potential strategy.

The site in combination with the initial research brought forth two main categories of research that needed to be further explored. These research themes are the adaptive reuse of heritage and affordable housing. A literature review of each theme was then conducted to better understand the major

[million-worth-of-municipal-tax-breaks-for-vacant-commercial-properties/wcm/6e210aec-70b9-43ec-97ff-3608d66aac32](http://ottawasun.com/2017/04/26/ottawa-dished-out-17-million-worth-of-municipal-tax-breaks-for-vacant-commercial-properties/wcm/6e210aec-70b9-43ec-97ff-3608d66aac32).

issues of each theme. From these themes, a thesis question was then formulated and posed.

The thesis question then influenced the type of research that needed to be done. The questions posed are not necessarily new ones. These questions have been asked over time and again in various ways. It was then fitting to look to past projects that asked the same questions and dealt with similar issues of heritage conservation and adaptive reuse and affordable housing to understand what worked in each case and what did not. These case studies aided in creating a comprehensive design strategy for the site that brings together both research themes. The design strategy then acted as a guideline for deciding what kind of intervention belongs on the site.

## LIMITATIONS

There were certain limitations reached during the research of this thesis. These limitations are as follows:

### *ACCESS TO THE SITE*

During the research period of this thesis the proposed case study site, the Federal Study Centre, had limited public access. As the site is currently vacant and owned by the federal government, it is prohibited for the public to enter the interiors of the buildings due to safety concerns. Early communications with the site custodian, Public Services and Procurement Canada, made it clear that an interior site visit would not be possible. Permission was granted to freely walk around the site and take exterior photos of the buildings without any supervision. In January of 2018, PSPC allowed for a guided tour of selected interiors for myself, Professor Mariana

Esponda, and her 4<sup>th</sup> year undergraduate class who are also using the site for their studio. During this visit Pavilions A, B, the ground floor of C, an upper floor of K, L and M were visited. No photos of the interiors were allowed during this tour. With limited interior access, most of the site information has been acquired through the detailed Heritage Recording Report provided by Heritage Conservation Services of PSPC. (HCS)

#### *EXISTING DOCUMENTATION*

When dealing with an existing site, the available documentation becomes a crucial starting point. Existing documentation can show how the original intentions for the site were carried out, and possibly what has changed since then. It can also bring insight to what was deemed important about a site depending on what features have remained throughout its service life.

Almost all of the existing site related documentation that was accessible for this thesis came from Heritage Conservation Services (HCS). All of their documentation was compiled in a Heritage Recording Report created in 2014. The report includes detailed as-built architectural plans created by HCS, and interior and exterior photography for every pavilion. There are also a few panoramic photography sets for the more unique interiors. Some laser scans of exterior areas have been taken and processed, but the scans consist of a very low-density point cloud that only helps to show the general massing and relationship between the buildings. Extensive photography was done for the exterior of each pavilion in preparation for photogrammetry of each elevation, but these photos were never processed.

While the existing documentation is extremely thorough, there are still a few information gaps. The government has not produced any sort of building condition report for the property, something that usually happens at least once for federal building assets. Without a building condition report, there is no recorded evidence of what kind of physical state each pavilion is in and whether or not there were any known issues. It is possible that this report never occurred because the government bought the building and did not commission it themselves. Another possibility for a lack of a condition report could be because plans to sell the property were being considered for a prolonged period of time so the report was deemed unnecessary. There are also no architectural drawings in terms of sections and elevations for the pavilions. The documentation focuses heavily on plan information and

the drawing set therefore has no vertical information of the site. Vertical information is especially important for the site context as each courtyard varies in elevation and this is not easily recognizable through the existing architectural plans.

The Library and Archives of Canada holds the entire collection of original drawings by Murray & Murray Associates. This includes an extensive assembly of drawings related to the Campanile Campus. The drawing set contains architectural plans, sections, elevations, structural layouts and details. These drawings are in their original size and quite delicate, because of this they were unable to be scanned. Photography was used to document the drawings as a reference for the vertical information needed. Therefore, any vertical information produced for this project is of a lower accuracy because the photographs were not taken parallel to the drawings.

## LITERATURE REVIEW

This section will summarize and synthesize the literature sources that have informed the thesis questions. The sources have been organized into the respected research themes of heritage conservation and adaptive reuse, and affordable housing.

## HERITAGE CONSERVATION & ADAPTIVE REUSE

This section will focus on theory and regulations related to heritage conservation and adaptive reuse. These concepts will then be carried over into the design. There are several key terms that need to be defined for this section, these definitions are taken from the Standards and Guidelines for the

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<sup>5</sup> Standards and Guidelines for the Conservation of Historic Places in Canada: a federal, provincial and territorial collaboration, Second ed. (Ottawa: Parks Canada, 2010), vi.

Conservation of Historic Places in Canada. The Standards and Guidelines provide a pan-Canadian set of conservation principles and guidelines for conserving Canadian historic places.<sup>5</sup> The definitions are as follows:

Historic Place: a structure, building, group of buildings, district, landscape, archaeological site or other place in Canada that has been formally recognized for its heritage value.<sup>6</sup>

Heritage Value: the aesthetic, historic, scientific, cultural, social or spiritual importance or significance for past, present and future generations. The heritage value of an historic place is embodied in its character-defining materials, forms, location, spatial configurations, uses and cultural associations or meanings.<sup>7</sup>

Character Defining Element: the materials, forms, location, spatial configurations, uses and cultural associations or meanings that contribute to the heritage

<sup>6</sup>Ibid, 5.

<sup>7</sup> Ibid.

value of an historic place, which must be retained to preserve its heritage value.<sup>8</sup>

Heritage Conservation: all actions or processes aimed at safeguarding the character-defining elements of an historic place to retain its heritage value and extend its physical life.<sup>9</sup>

Under the umbrella term of “heritage conservation” there are three main treatment methods:

Preservation: protecting, maintaining and stabilizing the existing form, material and integrity of an historic place or individual component, while protecting its heritage value.<sup>10</sup>

Restoration: accurately revealing, recovering or representing the state of an historic place or individual component as it appeared at a particular period in history, while protecting its heritage value. It may include removing non-character defining features from

other periods in its history and recreation missing features from the restoration period.<sup>11</sup>

Rehabilitation: the sensitive adaptation of an historic place or individual component for a continuing or compatible contemporary use, while protecting its heritage value.<sup>12</sup>

#### *REHABILITATION AND ADAPTIVE REUSE*

This thesis will primarily be focusing on the heritage conservation treatment of rehabilitation as the chosen method to be applied to the Federal Study Centre. In his book *On Altering Architecture*, Fred Scott makes the argument that rehabilitation is the mediator between the acts of restoration and demolition. Scott states that there are only three fates for

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<sup>8</sup> Standards and Guidelines, Parks Canada, 5.

<sup>9</sup> Ibid, 15.

<sup>10</sup> Ibid.

<sup>11</sup> Ibid, 16.

<sup>12</sup> Ibid.

a building once it has been completed: it can remain unchanged, it can be altered, or it can be demolished.<sup>13</sup> If a building was to remain unchanged from its original state, it would eventually result in the loss of its inhabitants and occupation as it becomes obsolete. Preservation would allow a building to remain in its unchanged state, but Scott makes the argument that buildings which are preserved become pieces of high art. He reasons that preserving a piece of architecture only serves the purpose of saving examples of work which reflects an architect's thoughts and the influence of the time period and place in which it was created.<sup>14</sup> In contrast, the demolition of a building is usually in preparation for the creation of something new. Buildings fated for demolition are

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<sup>13</sup> Fred Scott, *On Altering Architecture* (London: Routledge, 2008), 1.

<sup>14</sup> *Ibid*, 11.

usually seen as obsolete, that they were unable to keep up with the social and economic changes of the society surrounding them.<sup>15</sup>

Between these two options of obsolescence and newness lies the alternative option of alteration, otherwise known as rehabilitation. Alteration allows buildings to be kept beyond their time. The original building acts as a host for new work. The entire process becomes a translation from the past into the present, and also into the future.<sup>16</sup> Scott notes that it is imperative to consider the future, or else alteration could become destructive. If an altered building cannot cater to future needs then it will also be slated for demolition. Considering these three options, the Federal Study Centre cannot be

<sup>15</sup> *Ibid*, 17.

<sup>16</sup> *Ibid*, 11.

preserved since its original use is no longer an option, and as per Scott, it would remain an “empty monument of its time”. The Federal Study Centre should also not be demolished just because it no longer serves its original use. The compromise of alteration allows for the continued existence of the Federal Study Centre while also providing a new use that takes the current social and economic issues of society into consideration.

There are numerous reasons as to why the original use of a historic structure is no longer a viable option. This could be because the place is no longer needed for that purpose, its operation is no longer financially viable, demographics or technologies have changed, or because the spatial needs of the original use have changed and no longer work at that

location.<sup>17</sup> In these circumstances, a building should be repurposed for a new use. In the case of the Federal Study Centre, there are currently two separate occasions on when it saw a change of use. The first occasion was because its operation as a religious school was no longer financially viable. The second occasion was because the spatial needs of the federal training program no longer worked at that location. Since the federal government decided to remove the federal language and training facility, an adaptation must be made to include a new contemporary use for the site.

This form of rehabilitation is commonly known as “adaptive reuse”. Harold Kalman defines this term in his book *Heritage Planning* as the rehabilitation of a building where the

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<sup>17</sup> Scott, *On Altering Architecture*, 286.

use of a place is changed.<sup>18</sup> The process of adaptive reuse could require extensive modifications of the original structure. These alterations and additions are acceptable as long as they do not threaten, remove, or conceal any components that provide the place with its cultural significance.<sup>19</sup> Kalman notes that the first priority in a situation where adaptive reuse is necessary is to identify a viable and productive use for the historic place. Similar to Fred Scott, he emphasizes that the present and future uses of a historic structure are fundamental to its survival.

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<sup>18</sup> Harold Kalman, *Heritage Planning: Principles and Process* (New York: Routledge, 2014), 197.

<sup>19</sup> *Ibid.*

<sup>20</sup> *Ibid.*, 288.

In order to choose an appropriate new use, a set of practical guidelines are offered. A new use should achieve one of the following criteria from Kalman's perspective:

- It should differ from, but be thematically related to, the historic use.<sup>20</sup>
- It should be accommodated comfortably within the existing structure and spaces, without major changes or additions being required.<sup>21</sup>
- It should make a positive contribution to the social, cultural, or economic context of the neighbourhood.<sup>22</sup>
- Changes and/or additions should be made in a way that does not diminish the cultural significance of the place, require structural gymnastics, incur unaffordable capital, or have a negative impact on the surrounding properties or visual context.<sup>23</sup>

<sup>21</sup> *Ibid.*

<sup>22</sup> *Ibid.*

<sup>23</sup> *Ibid.*

The Standards and Guidelines also offer criteria that should be followed when undertaking an adaptive reuse project. In the set of standards laid out, there are three that specifically relate to adaptive reuse projects. They are as follows:

Standard 5: find a use for an historic place that requires minimal or no change to its character-defining elements.<sup>24</sup>

Standard 11: Conserve the heritage value and character-defining elements when creating any new additions to an historic place or any related new construction. Make the new work physically and visually compatible with, subordinate to, and distinguishable from the historic place.<sup>25</sup>

Standard 12: Create any new additions or related new construction so that the essential form and integrity of an historic place will not be impaired if the new work is removed in the future.<sup>26</sup>

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<sup>24</sup> Standards and Guidelines, 28.

<sup>25</sup> Ibid, 34.

While Scott's work provides a reason as to why a building should be repurposed, Kalman's work along with the Standards and Guidelines set out by Parks Canada provide strategies for how the adaptive reuse process should be carried out. Scott brings to light that buildings should not always be saved just because of their historic significance. While an "obsolete" building could be preserved as a monument of architecture, it might not be enough to stop it from remaining empty or being demolished. Alteration is a solution to this problem by making a building once again relevant to society with a contemporary use. Alteration acts as a balance between the preservation of culturally important architecture and society's need to keep evolving.

<sup>26</sup> Ibid, 23.

In comparison to Scott's theory on adaptive reuse, the guidelines provided by Kalman and Parks Canada put the historic significance of a building first. Both sets of guidelines make it clear that the new use must be compatible with the existing framework on site so as to minimize any drastic work that would take away from the existing cultural significance. In any case where alterations or additions need to be made to an existing historic structure to allow for a new use, everything must be compatible with the character of the existing building and not overshadow its cultural significance.

A balance must be struck between the need for a building to stay relevant to society as explained by Scott, and the need to preserve the cultural significance of a building for

current and future generations as outlined by Kalman and Parks Canada. The balance between these two ideals will allow for an adaptive reuse project which is sensitive to current and past ideals.

#### *MODERN HERITAGE*

As the Federal Study Centre built in 1965 is a modern complex, it is important to recognize the different issues facing modern heritage. The modern architecture movement began in Europe after World War I with a generation scarred by the devastation of war. This generation quickly took hold of the modern architecture movement, which sought to improve society's quality of life through buildings and spaces that dealt with everyday life.<sup>27</sup> This architectural movement spread across

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<sup>27</sup> Theodore H. M. Prudon, *Preservation of modern architecture* (Hoboken: Wiley, 2008), 2.

Europe, and then globally to the United States and Canada. For Canada, modern architecture picked up rapidly following the Second World War. The abstract aesthetic and functional objectives of modernism created an architectural form that could accommodate the diverse identity of Canada's population and its diverse geography.<sup>28</sup> Common themes in Canadian modernism consisted of "the engagement of a building with its site and context which was matched by technological innovation, and a lyrical yet pragmatic formalism in residential design in combination with a moderated architectonic monumentality in institutional architecture".<sup>29</sup> The post World War II era was also a time when Canadian modernist design focused on the residential suburb and the

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<sup>28</sup> Rhodri Windsor Liscombe and Michelangelo Sabatino, *Canada: Modern Architectures in History* (London: Reaktion Books, 2016), 19.

commercial downtown. This is evidently seen in the chosen location within a subdivision for the Federal Study Centre.

Modern architecture defined global design in the twentieth century, and it continues to influence the architecture that followed it.<sup>30</sup> The preservation of modern architecture is as important as any other historically significant time period, but it was not always seen this way. An anti-modern bias formed throughout the 1960s and 70s stigmatizing the preservation of modern architecture. During this timeframe, a great deal of major legislation and regulations for preservation were established. At a time when people were pushing for the preservation of earlier heritage works, modernist buildings from the recent past were sometimes seen as what destroyed

<sup>29</sup> *Ibid*, 14.

<sup>30</sup> Prudon, *Preservation of modern architecture*, 2.

them.<sup>31</sup> While select iconic modernist buildings were slowly being preserved in isolated cases, the preservation of modern architecture did not happen on a larger scale until the 1990s.<sup>32</sup>

The adaptive reuse of the Federal Study Centre could be looked at as a way to counteract against the stigma that modern heritage does not need to be preserved. As shown later on in the site analysis, the Federal Study Centre holds historical significance for its association with the notable Ottawa-based architect Tim Murray, the Sisters of the Congregation of Notre Dame, and the expansion of the Canadian federal government. It also holds architectural significance for being a cohesive modern campus. Repurposing the campus to a new program of affordable housing and community amenities provides an opportunity for

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<sup>31</sup> Prudon, *Preservation of modern architecture*, viii.

the dissemination of the importance of modern architecture. Similar to the way the iconic buildings from the modern era created an initial interest in the importance of the modern movement, the successful adaptive reuse of the Federal Study Centre could help expand emerging local public awareness on the importance of modern heritage.

While modern heritage is better accepted as preservation worthy, it still faces certain challenges today. The knowledge-base for modern heritage is still expanding and needs to continue through further studies. As part of these studies it is essential to include landscape design, urban planning, and interior design as an integral part of modern

<sup>32</sup> *Ibid*, 19.

architecture and its preservation.<sup>33</sup> These three disciplines are crucial to the overall understanding of modern buildings and will help to clarify the current thoughts on modern buildings that are being preserved today. Heritage designations are typically limited to the exterior footprint of the building, as is the case in the Federal Study Centre. This means that the interiors and landscape are particularly vulnerable to being changed before they can be understood. It might not always be feasible to keep these aspects of a modern building, but a better understanding would allow for the possible retention and reintegration of the philosophies behind these design aspects. Finally, there is a need to recognize that the interpretation of modern heritage today is affected by temporality.<sup>34</sup> Not much time has passed since the date of construction for some modern buildings and

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<sup>33</sup> Ibid, 21.

today's date. This means that the interpretations on the significance of modern architecture may change as time passes and it can be looked at from another lens.

#### *HERITAGE CONSERVATION AND SUSTAINABILITY*

The continuation of an existing building's lifespan through preservation and adaptive reuse not only has a cultural benefit, but a sustainable benefit as well. In Jean Carroon's *Sustainable Preservation: Greening Existing Buildings*, she details how an existing building can contribute to current sustainability efforts. There are several ways in which an existing building can be sustainable. Of these ways, the Federal Study Centre shows characteristics pertaining to the

<sup>34</sup> Ibid.

categories of embodied energy, embodied carbon, durability, and the passive survivability feature of long life-loose fit.

Embodied energy: is the energy used directly and indirectly in raw material acquisition, production of materials, and the assemblage of those materials into a building.<sup>35</sup> Embodied energy calculations try and quantify the amount of energy a building consumed from the moment resource extraction began until its demolition. If an existing building is demolished in order to build something new on the site, the embodied energy doubles. By reusing and refurbishing an existing building, less material waste is created and less energy is consumed. By reusing the Federal Study Centre, the building's

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<sup>35</sup> Jean Carroon, *Sustainable Preservation: Greening Existing Buildings* (Hoboken: Wiley, 2010), 7.

service life is extended therefore reducing the ratio of embodied energy to operating energy.

Embodied carbon: the amount of carbon emitted through building construction, including the entire cycle of material extraction, fabrication, transportation, and final assemblage.<sup>36</sup> The concept of embodied carbon is similar to embodied energy, the bottom line being to reduce the amount used or created. Retaining existing buildings prevents further carbon creation. A 2008 study from the British Empty Home Agency showed how energy efficient homes at the time were only able to recover the carbon expended from construction after 35 – 50 years.<sup>37</sup> This timeframe is sometimes longer than a building typically exists today. It is wasteful to demolish existing

<sup>36</sup> Carroon, *Sustainable Preservation*, 7.

<sup>37</sup> *Ibid*, 8.

buildings and create more carbon when the construction industry needs to become more sustainable because of climate change. Instead, existing buildings can further help reduce carbon emissions by also retrofitting them with sustainable interventions. Studies have proven that buildings built during the post-war period are some of the most inefficient building stock in terms of energy use.<sup>38</sup> The Federal Study Centre was originally constructed during that time period. While retaining the existing structures can help lessen the impact on carbon consumption, further action needs to be taken through sustainable interventions in order to reduce the operating consumption of carbon and energy.

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<sup>38</sup> Aylin Orbasli, *Re-using Existing Buildings Towards Sustainable Regeneration* (2009), 6.

Durability: when a building is made from durable materials that require minimal maintenance and have a low recurring embodied energy. Low recurring embodied energy refers to the energy required to maintain, repair, and restore materials.<sup>39</sup> Exterior masonry, such as the exterior brick walls for all of the pavilions within the Federal Study Centre, is considered a durable material.<sup>40</sup> To prolong the inherent durability of the site, future interventions and buildings should also be made from durable materials. This will prevent frequent maintenance or early replacement that would cause a higher total embodied energy for the site.

<sup>39</sup> Carroon, *Sustainable Preservation*, 8.

<sup>40</sup> *Ibid.*

Long life/loose fit: the passive survivability concept that a building can and should last a long time but allow for changing uses over time.<sup>41</sup> Passive survivability describes design features in a building that allow it to function even when modern systems and energy sources fail.<sup>42</sup> The conservation treatment of rehabilitation and adaptive reuse is built on the concept of long life/ loose fit. Another dimension to this is allowing the design of a new space to be adaptable towards different functions. This means that it should not be designed specifically towards only one function.

Outside of concepts put forth by Carroon, the retention of existing buildings also contributes to sustainability through

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<sup>41</sup> Carroon, Sustainable Preservation, 11.

<sup>42</sup> Ibid, 10.

<sup>43</sup>Muluken Yeheyis, Kasun Hewage, M. Shahria Alam, Cigdem Eskicioglu, and Rehan Sadiq, "An Overview of Construction and Demolition Waste

the reduction of waste. The waste generated by construction and demolition from the Canadian construction industry contributes to 27% of the municipal waste being sent to landfills.<sup>43</sup> By keeping and refurbishing an existing building, the amount of construction waste being sent to landfills can be reduced. While rehabilitating a building will inevitably still create a certain amount of waste as spaces are modified and new additions are created, it would still create less waste than if a building was first completely demolished before a new one could be created. In the case of the Federal Study Centre, a large amount of waste would be created from demolishing the 12 existing pavilions.

Management in Canada: A Lifecycle Analysis Approach to Sustainability," Clean Technologies and Environmental Policy 15, no. 1 (2013;2012:), 81.

The reuse of an existing building can additionally reduce the use of greenfields and prevent further urban sprawl. Urban sprawl is defined by the Merriam-Webster dictionary as the spreading of urban developments, such as houses and shopping centers, on undeveloped land near a city.<sup>44</sup> Instead of cities and developers looking towards land that has never been developed as the site for future projects, an existing building can provide a site that is usually already located within city boundaries. This in turn makes use of the existing infrastructure of the city such as the roads, sewers, electrical grid, and public transportation services. If a development were to occur on a greenfield site, construction would not solely be limited to the building. Instead, it would have to include the

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<sup>44</sup> "Urban Sprawl." Merriam-Webster.com. Accessed March 30, 2018. [https://www.merriam-webster.com/dictionary/urban sprawl](https://www.merriam-webster.com/dictionary/urban%20sprawl).

creation of all of the associated infrastructure that would allow the building to function.

#### *FHBRO AND DISPOSAL*

The Campanile Campus is a recognized heritage building under the FHBRO, which defines built heritage as places, buildings, and monuments that have been recognized as having heritage value by the federal government.<sup>45</sup> Being designated for heritage value means that the buildings or places recall the lives and history of the men and women who contributed to the building of the country. The FHBRO system has two levels of designation, a place can either be designated as classified or recognized, with classified being the highest level of designation.

<sup>45</sup> "Federal Heritage Buildings Review Office: Introduction," Parks Canada, June 21, 2017, accessed November 08, 2017, <https://www.pc.gc.ca/en/culture/beefp-fhbros/introduction>.

The Campanile Campus' designation as a recognized building protects the footprint of each pavilion along with the exterior facades.<sup>46</sup> The only pavilion not covered by the designation is Pavilion M which is most likely not originally part of the complex. All of the interiors of the pavilions along with any exterior landscaped areas are also not part of the designation. The complex was used as the Federal Study Centre by the government until 2014. The site was then deemed surplus by the government and has since been vacated. When a FHBRO designated building is no longer needed by the government, they are considered surplus, and there is a specific disposal process that needs to happen. The

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<sup>46</sup> "Pavilion A," Canada's Historic Places. Accessed October 03, 2017, <http://www.historicplaces.ca/en/rep-reg/place-lieu.aspx?id=13968>.

disposal process has been summarized for clarity in the following three paragraphs.

Disposal is a process that occurs when the custodian department, the department who currently owns and uses the building, no longer needs it and would like to sell it. It means that a new owner is needed for the building. The main point of this process is to ensure that the best efforts are made for finding a new and appropriate use for a building, or to make sure that all options were explored and deemed unviable before a building is demolished.<sup>47</sup> Once a building is no longer needed and has been termed a "surplus federal heritage building," the custodian department is

<sup>47</sup> "Disposal - Federal Heritage Buildings Review Office," Parks Canada, April 01, 2017, Accessed October 22, 2017. <https://www.pc.gc.ca/en/culture/beefp-fhbro/process/alienation-disposal>.

obligated to consult FHBRO before any action is taken to sell or demolish a building. In the case of the Federal Study Centre, the current custodian is Public Services and Procurement Canada (PSPC).<sup>48</sup>

An alternative use is usually sought for the building in question. The government first looks to see if the building could stay in the possession of the federal government under another department. If this is not a viable solution, the building will also be offered up to other levels of government such as the provincial or municipal levels. If there is no possibility that the surplus building can remain in the possession of the government, the building will then be offered for sale to

organizations and private companies through Canada Lands Company (CLC). CLC is a federal crown corporation that specializes in real estate and development.<sup>49</sup>

FHBRO will advise the custodian department throughout this entire process, weighing in on potential alternative uses for the surplus building; the new and appropriate levels of protection the building will need if it leaves the federal inventory; the level of heritage recording that needs to be done, and what kind of heritage clauses need to be included in the sales

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<sup>48</sup> "Federal Study Centre - Carleton graduate, M. Arch.," e-mail from Tara Dinsmore, December 14, 2017.

<sup>49</sup> "What We Do," Canada Lands Company, Accessed December 28, 2017, <http://en.clc.ca/>.

agreement.<sup>50</sup> When the custodian department and FHBRO have found an acceptable alternative use, a detailed disposal report needs to be submitted to FHBRO to show that all of the policy requirements have been met. Buildings that are leaving the federal inventory as they will no longer be protected under the Treasury Board policy.<sup>51</sup> Instead, the building's new level of protection needs to be detailed in the sales agreement as outlined as part of FHBRO's advisory tasks.

The FHBRO disposal process highlights that it is essential to find a fitting alternative use for a heritage building that accentuates its already existing qualities. FHBRO also acknowledges that the best way to keep heritage buildings protected is to also keep them in use; the main point of the disposal process is to arrange an alternative use for the surplus heritage building.<sup>52</sup> Currently the Federal Study Centre is still under designation by FHBRO and is owned by PSPC. While there were talks of the site being transferred to CLC for sale in 2015, the process was stopped for reasons unknown to the public.<sup>53</sup> Since then, there has been no other publicly available information on the status of the site. From sitting vacant since

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<sup>50</sup> "Disposal - Federal Heritage Buildings Review Office," Parks Canada, April 01, 2017, Accessed October 22, 2017. <https://www.pc.gc.ca/en/culture/beefp-fhbro/process/alienation-disposal>.

<sup>51</sup> Ibid.

<sup>52</sup> Ibid.

<sup>53</sup> Robert Bostelaar, "Government expected to sell Heron Road training centre," Ottawa Citizen, January 29, 2015, accessed December 12, 2017, <http://ottawacitizen.com/news/local-news/government-expected-to-sell-heron-road-training-centre>.

2014, it can be assumed that the government has yet to find an appropriate new owner and alternative use for the site. As a large and intact complex, it has high potential to be used and has also been recognized by CLC as a strategic site for sale and redevelopment.<sup>54</sup> The protection that FHBRO has given the Campanile Campus has created a unique set of conditions for its next phase of use. The site has remained as a whole and relatively unaltered for the last 50 years, partly due to its heritage designation in 2005. It is a site that has seen minimal effects from the past decades.

The Federal Study Centre was not a federal building from the start, but it now has a federal designation. While the federal heritage designation for the campus highlights its

architectural significance and its historical associations with the growth of Ottawa and the federal government, it does not recognize the campus' importance to the local community. Since the complex is being taken out of the federal inventory, it is in a way being given back to the community it originated from. As part of the disposal process, the local community should be allowed to have an input on its value to them. The community around the Federal Study Centre has evolved over the years, and so has the value the site holds. This evolution should be reflected in a new heritage assessment of the site which can better inform what aspects of the site should be preserved.

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<sup>54</sup> "Federal Study Centre - Carleton graduate, M. Arch.," e-mail from Tara Dinsmore, December 14, 2017.

#### *DESIGN GUIDELINES TAKEN FROM TOPIC*

- An existing building should be reused to extend its service life.
  - An adaptation of an existing building should be compatible and sensitive towards the existing historic fabric.
  - An adaptation should make a positive contribution to the social, cultural, or economic context of the neighbourhood.
  - New program implemented in an existing building should be compatible with the existing structure and layout.
  - The preservation of modern heritage has been difficult in the past, but the reuse of a modern building can fight against its stigmatization.
  - The reuse of an existing building can have sustainable benefits such as the reduction of embodied energy, embodied carbon, urban sprawl, and the use of greenfield sites.
- Inherent design qualities such as the durability of construction materials and the loose design of spaces allow for the prolonged life of a building.
  - Heritage designation can help to preserve an existing structure.
  - The values of a site need to be considered from the standpoint of the local community.

## AFFORDABLE HOUSING

This section will look at affordable housing regulations and best practices along with other research and statistics that specifically focuses on affordable housing in Ottawa. The term “affordable housing” tends to be used interchangeably with the term “social housing” when they in fact mean two different things. The definition for both terms is taken in a Canadian context from CMHC:

- Social housing: a type of housing that usually refers to rental housing that is subsidized by the government<sup>55</sup>
- Affordable housing: a broader category of housing that includes housing provided by the private, public, and not-for-profit sectors as well as all forms of housing tenure (rental, ownership, and cooperative ownership). Affordable housing can also be temporary or permanent.<sup>56</sup>

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<sup>55</sup> "About Affordable Housing in Canada," CMHC, Accessed October 16, 2017, [https://www.cmhc-schl.gc.ca/en/inpr/afhoce/afhoce\\_021.cfm](https://www.cmhc-schl.gc.ca/en/inpr/afhoce/afhoce_021.cfm).

## 2017 FEDERAL BUDGET AND HOUSING

One of the key pieces of information that really directed the course of this thesis was the announcement of the 2017 Canadian Federal Budget. The 2017 budget outlined several areas that the government is planning to spend on, the one of particular importance to this thesis is affordable housing. There are intricate details on how the funding for affordable housing will be applied over the years and which organizations or departments of the government will receive it. The scope of this thesis will not go into detail on the funding breakdown or whether or not the plan for distribution will be successful. Instead, this thesis will look at the 2017 Federal Budget at a general level. The fact that a funding plan for affordable

<sup>56</sup> Ibid.

housing has been included shows the government's commitment and raises the importance affordable housing has to Canadians on a national level.

The 2017 Federal Budget proposes an \$11.2 billion investment from the government into a new National Housing Strategy that spans over the course of a decade. It intends to address the persistent call from many cities and advocates for a more predictable and long-term funding plan for affordable housing.<sup>57</sup> Funding has also been allocated for short-term programs aimed at issues such as retrofitting aging social housing assets. This money could potentially help cities such

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<sup>57</sup> Steve Pomeroy, "Distilling the Tea Leaves: What the 2017 Federal Budget Really Means For Housing," Publication, Centre for Urban Research and Education, Carleton University. March 2017. Accessed October 12, 2017. <https://carleton.ca/cure/wp-content/uploads/CURE-Brief-Federal-Budget-2017.pdf>, 1.

<sup>58</sup> Jon Willing, "Budget mum on Stage 2 LRT funding but mayor says funds guaranteed," Ottawa Sun, March 22, 2017, accessed August 15, 2017,

as Ottawa by providing funding to repair and build new affordable housing units in the near future.<sup>58</sup> There is also a new funding program that aims at promoting innovative approaches to creating affordable housing.<sup>59</sup> An article from the Ottawa Sun also reported that the federal government would want to use vacant federal buildings and land as a financial solution for affordable housing. They are proposing to make \$202 million worth of surplus federal assets available for housing over the course of several years.<sup>60</sup> This strategy would be extremely beneficial for Ottawa as the city currently houses a vast number of federally owned properties.

<http://ottawasun.com/2017/03/22/city-should-benefit-on-housing-and-child-care-but-budget-mum-on-stage-2-lrt-funding/wcm/09081518-5156-4990-94ce-acee46fcb84a>.

<sup>59</sup> Pomeroy, "Distilling the Tea Leaves: What the 2017 Federal Budget Really Means For Housing," 3.

<sup>60</sup> Willing, "Budget mum on Stage 2 LRT funding but mayor says funds guaranteed".

The use of vacant federal lands for affordable housing could be seen as part of the short-term funding initiative to find innovative solutions for affordable housing. The reuse of vacant federal land would potentially be helping to address the issues of affordable housing and urban development in the city. As land acquisition can be one of the first and most expensive components for new developments, particularly in the case of affordable housing, the possibility of lower costs from the federal government would help organizations to get over the initial hurdles that usually stop affordable housing from being built. If this strategy were to be executed, it should be noted that vacant buildings should first be looked at for their potential as housing before vacant land is considered. This will

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<sup>61</sup> Canadian Housing and Renewal Association and Canadian Electronic Library, *Housing for all: Sustaining and Renewing Social Housing for Low-Income Households: A Call for Federal Reinvestment as Operating*

contribute to sustainable design efforts and help to reduce the destruction of greenfield sites and limit urban sprawl.

#### *SOCIAL HOUSING IN CANADA AND THE CMHC*

The Canadian Mortgage and Housing Corporation (CMHC) is the country's federal authority on housing. CMHC is also historically linked to the development of social housing in Canada. CMHC was first created in 1946 shortly after World War II when there was a demand for mass housing in a short period of time. Under CMHC, social housing was first created in Canada in 1949 with the first federal-provincial public housing program.<sup>61</sup> At the time CMHC, which was part of the federal government, managed and funded all social housing projects in the country on behalf of the federal government. In

*Agreements Expire*, Ottawa, Ontario: Canadian Housing and Renewal Association, 2014, 2.

some cases, CMHC would only help fund part of the project with the provincial or territorial government covering the remaining costs. In this situation, CMHC would create federal-provincial-territorial agreements between the federal government and provincial or territorial government where the housing project resided.<sup>62</sup> CMHC policy was then expanded in the 1970s to include the creation of community-based not-for profit projects and co-operative housing.<sup>63</sup> This allowed for more local authorities and groups to be part of the decision-making process for social housing projects.

The focus for almost all of the housing programs and projects was on low-income households. Most programs run by CMHC restricted people's access to social housing and

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<sup>62</sup> Canadian Housing and Renewal Association and Canadian Electronic Library, *Housing for all*, 2.

<sup>63</sup> *Ibid.*

specifically only allowed low-income households in. The affordability of social housing was achieved through a system known as rent-gear-to-income (RGI) housing. RGI housing meant that the rental price of a unit is based on the income of the tenant, with the remaining costs covered by the government.<sup>64</sup> This system remained in place from the start of CMHC until 1972. From 1973 to 1985, the RGI housing scheme was not used to achieve affordability. Instead, rents were set at levels that covered the operating costs for projects. Rent Supplements for tenants were then separately added onto some of the homes in order to target low-income households.<sup>65</sup> This allowed for a mix of incomes to be included in social housing projects instead of solely low-income

<sup>64</sup> *Ibid.*

<sup>65</sup> *Ibid.*

households. The funding scheme was switched in 1986 back to RGI housing and all social housing projects once again only targeted low-income households.

In 1993 all new funding to social housing was stopped by the federal government. The federal government would no longer be directly managing any social housing projects. CMHC negotiated new administrative agreements with the provinces and territories through Social Housing Agreements (SHA) where all housing projects were transferred over to provinces and territories in charge of their jurisdictions.<sup>66</sup> The SHA also guaranteed that the federal government would continue to provide funding until these operating agreements expired. This decision from the federal government created a

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<sup>66</sup> Canadian Housing and Renewal Association and Canadian Electronic Library, Housing for all, 4.

major change in how social housing was handled throughout the country. The change in distribution of responsibility was said to have occurred because the federal government recognized that provinces and territories were more knowledgeable on where money should be invested for housing.<sup>67</sup>

#### *CMHC TODAY*

As stated on their website, CMHC currently helps to stabilize the housing market and financial system, provide support for people in need of housing, and produce housing research and advice for the Canadian government, consumers, and the

<sup>67</sup> "About Affordable Housing in Canada," CMHC, Accessed October 16, 2017, [https://www.cmhc-schl.gc.ca/en/inpr/afhoce/afhoce\\_021.cfm](https://www.cmhc-schl.gc.ca/en/inpr/afhoce/afhoce_021.cfm).

housing industry.<sup>68</sup> Their main mandate is to help Canadians meet their housing needs. CMHC remains the national authority on housing and an extension of the federal government. The federal government invests towards housing through CMHC, who then distributes the funding to various programs and initiatives based on research and market needs.

From its early days, CMHC has branched out and created numerous financial programs that benefit other households instead of solely focusing on low-income housing. Currently, there are a variety of programs that target specific applicants and situations such as programs for the provinces, and programs for different types of housing tenure. For example, the program “Ontario Renovates” is specifically

geared towards providing affordable loans to homeowners and landlords in the province for major repairs on properties. The intentions of the program are to provide habitable living spaces that address overcrowding, provides modifications for accessibility, creates garden spaces, and repairs shelter units that assist victims of family violence.<sup>69</sup>

In regards to affordable housing, CMHC still contributes through funding programs even if they no longer manage the housing programs and assets. In 2001 the federal Affordable Housing Initiative (AHI) was created. The initiative was worth \$1 billion, which would be distributed over 8 years and shared between the provinces and territories.<sup>70</sup> This amount was then cost-matched by provinces and territories so that new housing

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<sup>68</sup> "About CMHC," CMHC, June 19, 2017, accessed October 06, 2017, <https://www.cmhc-schl.gc.ca/en/corp/about/index.cfm>.

<sup>69</sup> ""About Affordable Housing in Canada," CMHC.

<sup>70</sup> Canadian Housing and Renewal Association and Canadian Electronic Library, Housing for all, 4.

projects could be developed and funding would be available to provide subsidized rent. The provinces and territories were responsible for choosing the programs they designed to address the local housing needs and priorities.<sup>71</sup> In 2014, the Affordable Housing Initiative (AHI) was replaced with the Investment in Affordable Housing (IAH). This program is also being funded through a federal-provincial-territorial agreement, like the AHI, and will expire in 2019<sup>72</sup>.

Social housing operating agreements have slowly begun to expire over the last few years. This means that the federal government is slowly starting to invest less money into affordable housing programs annually. Currently the federal

government spends around \$2 billion yearly to housing programs through CMHC.<sup>73</sup> Federal spending on affordable housing is projected to fall to only \$1 billion by 2020, \$530 million in 2025, \$81 million in 2031, and zero investments by 2040.<sup>74</sup> The declining investment from the federal government puts a strain on provincial and territorial governments to provide more funding towards these programs, which is not always possible. This could place a strain on other housing budgets and possibly force cuts to other essential programs and services provided by the provincial and territorial governments.<sup>75</sup> It could also mean that in order to balance the lack of funding, rental prices may need to be increased for low-

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<sup>71</sup> "About Affordable Housing in Canada," CMHC.

<sup>72</sup> Canadian Housing and Renewal Association and Canadian Electronic Library, *Housing for all*, 5.

<sup>73</sup> "About Affordable Housing in Canada," CMHC.

<sup>74</sup> Canadian Housing and Renewal Association and Canadian Electronic Library, *Housing for all*, 5.

<sup>75</sup> *Ibid*, 8.

income households with the possibility of eviction if there is no alternative for housing providers.

It is important to understand how affordable housing is funded in the country when looking at the practicality of this thesis project proposal. While it is evident from the vast number of funding programs targeting housing that it is an important part of the government's social programs, it should still be noted that funding for housing is always constantly in need. If this thesis were to be built in real life, funding would probably be one of the largest concerns for the follow through of the project. For this to be a viable design proposal, funding cannot come solely from the government. The government would likely need to partner with private organizations that have the

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<sup>76</sup> Willing, "Budget mum on Stage 2 LRT funding but mayor says funds guaranteed".

ability to invest in such a large development and want it to succeed.

The declining federal investment in affordable housing is most likely one of the major reasons that many cities and advocates were demanding a more stable and long-term funding plan for affordable housing as part of the 2017 federal budget.<sup>76</sup> The announcement of the \$11.2 billion National Housing Strategy was the federal government's response to those demands. While this new funding strategy looks to be on par with the past investments to affordable housing, there is a possibility it might not be enough.<sup>77</sup> If most existing social housing projects were created between 1949 to 1993, it can then be assumed that the current affordable housing stock is

<sup>77</sup> Canadian Housing and Renewal Association and Canadian Electronic Library, Housing for all, 5.

aging and in need of repair.<sup>78</sup> Money would need to be put towards repairing the existing housing stock, covering existing rent subsidiary programs, and provide funding for the creation of new affordable units. As shown in a following section on affordable housing in Ottawa, the city currently faces a long waitlist of households already waiting to get an affordable unit. The need for affordable housing in Ottawa is most likely mirrored in other major cities across Canada.

#### *CMHC AND ADAPTABLE HOUSING*

As part of CMHC's mandate to help all Canadians have access to housing, they have outlined several design options that can be incorporated in future community planning and housing

construction. One of these design options deals with "adaptable housing".<sup>79</sup> At the scale of a community, adaptable housing means that a community should offer a range of housing types and a variety of different tenure options.<sup>80</sup> Providing numerous housing options in one community gives it the ability to adapt to the different housing needs of the residents as they change throughout their life. This also allows for residents to remain in the community that they have created over the years instead of having to leave because their housing no longer meets their changing requirements.<sup>81</sup> An adaptable housing development should also offer housing options with different levels of care for residents as they age.

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<sup>78</sup> Canadian Housing and Renewal Association and Canadian Electronic Library, *Housing for all*, 8.

<sup>79</sup> "Universal Design and Adaptable Housing Models," Canada Mortgage And Housing Corporation, September 20, 2016, accessed October 15, 2017, [https://www.cmhc-schl.gc.ca/en/inpr/bude/adho/adho\\_002.cfm](https://www.cmhc-schl.gc.ca/en/inpr/bude/adho/adho_002.cfm)

<sup>80</sup> Ibid.

<sup>81</sup> Ibid.

Housing types should range from self-contained units for independent living, to housing with a higher level of support, to full-care housing.<sup>82</sup> This allows seniors to remain in their community instead of isolating them from family and friends because they may require some more support.

What all of this translates to is a community that can cater to the ever-changing needs of the resident. This community has single-detached homes, townhouses, rental apartments, condominiums, retirement homes, and senior care facilities for different levels of independence. For example, a person would be able to rent an apartment as their starting housing type. They may then decide to buy a condominium in a different part of the neighbourhood after they get married. When the couple decides that they want to have kids, they

would then be able to move into a single-detached home in another part of the neighbourhood. After the children have left for university the couple may then decide to downsize and move back into a condominium. When it then becomes harder for them to live independently, they would have the option to move into a retirement home that offers them some more support in the same neighbourhood.

The theme of adaptability connects affordable housing to heritage conservation. For affordable housing, adaptability is about providing different options in order to allow the retention of a community. In heritage conservation, adaptability is about altering a space for modern uses to allow for the retention of a historic structure. Adaptability also relates to the sustainability concept of long life/loose fit where a “loose” or

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<sup>82</sup> Ibid.

non-program specific design allows for a space to better adapt to new uses and remain in service. In all cases, adaptability is the factor that allows something to continue throughout history as people and society are constantly changing. Adaptability is the factor that allows both housing and historic structures to remain relevant in the modern era by allowing them to serve a current need.

#### *AFFORDABLE HOUSING IN OTTAWA*

As this thesis aims to improve the condition of affordable housing in Ottawa through architectural adaptation for reuse, it is pertinent that the current conditions of affordable housing in the local context be recognized. The following analysis of affordable housing in Ottawa is based on information taken

from Ottawa Insights. Ottawa Insights is a project run by the Ottawa Community Foundation in collaboration with numerous organizations that work on the issues being analyzed, and/or help to provide the data.<sup>83</sup>

Data collected by the Ottawa Neighbourhood Study showcases the affordable housing availability and need in Ottawa as seen in figure 6. The Ottawa Neighbourhood Study website provides data on the strengths and challenges for each neighbourhood in Ottawa.<sup>84</sup> It is run by a multidisciplinary team that consists of the University of Ottawa, the City of Ottawa, local Community Health & Resource Centres, Ottawa Public Health, United Way/Centraide Ottawa, The Champlain Local

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<sup>83</sup> "Introduction to Ottawa Insights," Ottawa Insights, accessed October 24, 2017, <https://www.ottawainsights.ca/about/>.

<sup>84</sup> "Welcome to Ottawa Neighbourhood Study," Ottawa Neighbourhood Study, accessed December 1, 2017, <https://www.neighbourhoodstudy.ca/>.

Health Integration Network, and other community partners.<sup>85</sup>

The team works together to compile data on different aspects of Ottawa in hopes that the resource can provide better community planning.

The breakdown of the figure illustrates that the percent of households spending 30% or more of their income on housing in the city is an average of 22%.<sup>86</sup> Research has shown that households spending 50% of their income or more on housing costs are at a greater risk of becoming homeless. Spending more on housing costs forces most low-income households to spend less on other necessities such as food.<sup>87</sup> Looking at the distribution of affordable housing units per 1000

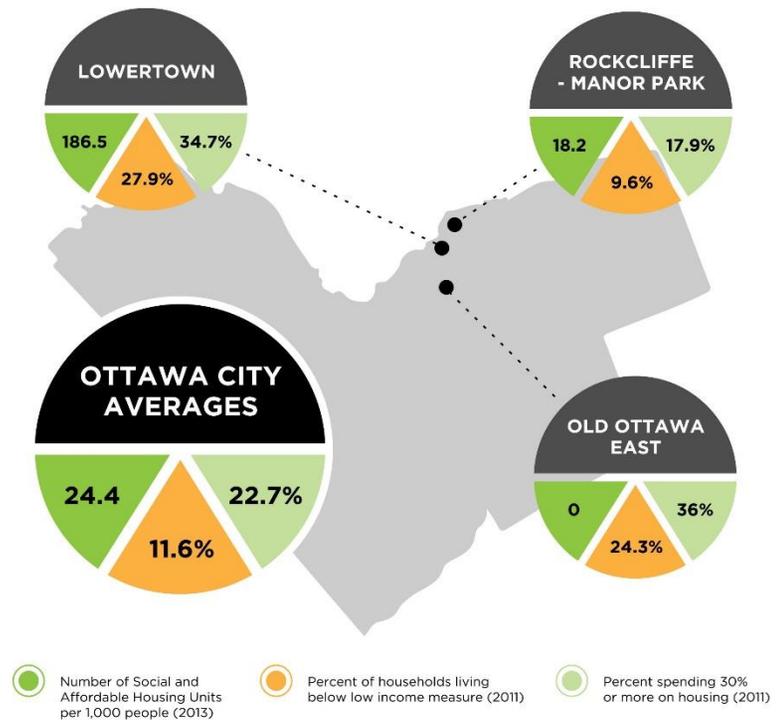


Figure 6: Affordable housing breakdown in Ottawa

<sup>85</sup> "About The Team," Ottawa Neighbourhood Study, accessed December 1, 2017, <https://www.neighbourhoodstudy.ca/about-the-team/>.

<sup>86</sup> Households Archives," Ottawa Insights, accessed October 24, 2017, <https://www.ottawainsights.ca/explore/households/>.

<sup>87</sup> Ibid.

people across the city, there is an uneven number of units in the Lowertown area. If low-income households, affordable housing, and social housing is constantly concentrated within certain neighbourhoods, this could lead to neighbourhoods being stigmatized as poor or unsafe areas. The concentration of affordable housing to certain neighbourhoods also goes against the concept of adaptable housing from CMHC. Affordable housing should instead be integrated into all neighbourhoods with different housing types so that residents have various options to meet their changing needs.

According to data collected by the Ottawa Neighbourhood Study and the Alliance to End Homelessness Ottawa, there is also a high unmet demand for affordable

housing in the city. The majority of affordable housing in the city consists of rent-geared-to-income units from not-for-profit developments.<sup>88</sup> Rent is typically set at no more than 30% of the tenant's income. In this affordable housing financing scheme, the supplement is attached to the unit and not the tenant, so the supplement cannot be transferred to another unit if the tenant wishes to move.<sup>89</sup> There is an extensive waitlist to get an RGI unit, with the average waiting time being almost 5 years. People on the waitlist include those whose current housing is considered unaffordable or inadequate, along with people who are homeless.<sup>90</sup> As of 2014, there were 10,312 households on the RGI waitlist, 3,750 of these households were families.

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<sup>88</sup> "Households Archives," Ottawa Insights, accessed October 24, 2017, <https://www.ottawainsights.ca/explore/households/>.

<sup>89</sup> Ibid.

<sup>90</sup> "Households Archives," Ottawa Insights, accessed October 24, 2017

**NUMBER OF OTTAWA HOUSEHOLDS ON WAIT LIST FOR RENT-GEARED-TO-INCOME (RGI) HOUSING, 2014: 10,312**



AVERAGE TIME ON OTTAWA RGI WAIT LIST BEFORE OBTAINING RGI HOUSING, AS OF 2013:



OTTAWA AVERAGE NUMBER OF SOCIAL AND AFFORDABLE HOUSING UNITS PER 1,000 PEOPLE:



**RENTAL VACANCY RATES IN OTTAWA 2014**



Figure 7: Affordable housing need in Ottawa

Part of the problem is that Ottawa has very low vacancy rates so there are few options to getting off the waitlist. The fact that the rent supplement is attached to a unit also does not help the situation. For example, if a couple was living in a one-

bedroom RGI unit and decided to have a child, there might not be another RGI with two bedrooms available for them. This could mean that some households already living in an RGI unit might also be living in an inadequate house. The data also shows that rental vacancies for two-bedroom, one bedroom, or bachelor apartments is quite low, but there is no data stating the vacancy rates of houses. If more than a third of the households on the RGI waitlists are families, it can be inferred that a family household is most likely one or two parents with one or two or more kids. That means that families could spend a longer time on the RGI waitlist because there are not enough rental units that can accommodate a family.

The need for a specific type of affordable housing in Ottawa directly influences the type of program that the adaptive reuse of the Federal Study Centre should provide. From the

data presented here it is clear that affordable housing should be available in all parts of the city. It is also evident that there needs to more affordable housing provided by other sources besides RGI units from not-for-profit groups. This could mean that affordable housing should also be better incorporated into private developments to give more options to households, and to also alleviate the demand for RGI units. The breakdown of the households on the RGI list in turn points out that more rental units need to be geared towards families. This could mean providing more rental houses or three-bedroom apartments. These observations have played into the selection of the site, which is located in a neighbourhood with a range of needs as will be described in the site analysis section.

#### *DESIGN GUIDELINES TAKEN FROM TOPIC*

- Affordable housing can be achieved through the use of vacant federal lands and buildings, but vacant buildings should be the priority for reuse.
- The continued funding of affordable housing initiatives from the federal government through CMHC needs to happen in order to provide new affordable housing projects and upgrades to the existing housing stock.
- Housing should be adaptable on a neighbourhood scale in order to meet the changing needs of residents while allowing them to remain in their community.
- Housing developments should include different housing types and tenures that give people options.
  - Apartments and condominiums with one, two, and three-bedroom units
  - Single detached homes and townhouses
- Housing developments should address the need for more affordable housing units across Ottawa, particularly units that cater to families.

## PRECEDENT ANALYSIS

This section will look at four precedents related to housing and discuss the pros or cons of each project and how it will influence the adaptive reuse of the Federal Study Centre. Precedent A is about a recent affordable housing development in Ottawa that uses the principle of adaptable housing. Precedent B is about a federal site in which existing buildings were demolished. Precedent C is about how a school can be converted into housing. Precedent D is about a federal site where some of the existing buildings will be reused as housing.

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<sup>91</sup> "The Haven: A Model for Innovative Affordable Housing in Ottawa," Multifaith Housing Initiative, accessed September 28, 2017, <http://www.multifaithhousing.ca/the-haven.html>.

## A: THE HAVEN

Year: 2017

Location: Nepean, Ontario, Canada

Program: affordable housing, low-rise apartments, townhouses, multi-use community space, children's playground, and community garden<sup>91</sup>

Description:

The Haven is an affordable housing project in Ottawa created by the not-for-profit charity Multifaith Housing Initiative (MHI). MHI is a charity focused on providing safe and affordable housing in Ottawa<sup>92</sup> For the Haven, MHI partnered with the City of Ottawa for the funding and construction. The development includes 98 housing units with 10 units being accessible, the

<sup>92</sup> "Who We Are," Multifaith Housing Initiative, accessed September 28, 2017, <http://www.multifaithhousing.ca/about.html>.

project, which was recently completed, houses roughly 300 people.<sup>93</sup> It offers a certain number of units at different price ranges to help families with different income needs. The break down is as follows:

- 40% of the units are offered at a deep market rate
- 40% of units are offered at a low market rate
- 10% of units are offered at the average market rate

When visiting the site in September for a tour, one of the guides mentioned that one of the key things about affordable housing is that it should not look any different from regular housing. The design puts an emphasis on community by making the development feel like its own small town. Communal amenities have been provided such as a future

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<sup>93</sup> Ibid.

children's playground, communal garden, laundry rooms, and multi-purpose gathering rooms. Reinforcing this idea of community is the positioning of the parking, which has been moved to the perimeter of the development in order to provide space for a pedestrian promenade lined with vegetation between the townhouses. The strategically located parking lots provide parking for both the townhouses and apartments alike, none of the townhouses have a driveway. The design also has an emphasis on inclusivity by making sure that all communal spaces and all of the ground floors of the townhouses are accessible.<sup>94</sup> This way neighbours are able to visit each other and no one is excluded. The community garden will also have raised beds in order to meet diverse mobility needs.

<sup>94</sup> Suzanne Le, "The Haven" (lecture, 'LEED'ing to Gold, The Haven, Ottawa, September 26, 2017).

How it informs the thesis and design:

The Haven offers some logistical and design insight on how a new affordable housing development could be funded and created. It shows that there needs to be a mix of unit and housing types within a community. It is also an example of how a funding scheme could be organized in order to meet different income needs where average market priced units are able to offset the low and deep market rate units. One design aspect that seemed quite successful was the peripheral location of parking to allow for a promenade that tied the community together. A similar design strategy was initially taken on the Federal Study Centre when it was originally built as the Campanile Campus. All of the buildings on the site are interconnected together by outdoor courtyards while all of the vehicular circulation is left at the perimeter of the site.

Design Guidelines Taken from Precedent

- The design of the development should focus on adaptability and accessibility.
- Parking should remain on the peripheral of the site to allow for more communal spaces.
- Common communal spaces should be included for the residents.
- Unit pricing should be broken down into several tiers to provide financially viable affordable housing.



Figure 8: Pedestrian promenade between townhouses



Figure 9: Periphery parking for residents

## B: CFB ROCKCLIFFE VETERAN HOUSING

Year: 2018 (Currently under construction)

Location: Ottawa, Ontario, Canada

Program: veteran housing

### Description:

CFB Rockcliffe was originally a large military base established in 1899 by the Department of National Defence. By the 1920s the base worked as a self-contained community including a large sub-division as part of the site. The site grew to comprise of more than 300 hectares of land<sup>95</sup> The property was officially declared surplus in 1984 and the site closed in 2009. Since then, the site has remained abandoned until recently. In 2016

CLC announced plans to redevelop the 300 hectares of land into a large housing development in partnership with 3 local building companies.<sup>96</sup> The original sub-division and other military buildings have already been demolished to make way for the new development. As part of the redevelopment there will be a small veteran housing unit also developed by the not-for-profit charity Multifaith Housing Initiative. While this new housing development will encompass approximately 326 hectares of land, the veteran housing will only be one building big enough to accommodate 16 veterans.<sup>97</sup>

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<sup>95</sup> "History," CLC Rockcliffe Lands: Redevelopment web site, accessed September 21, 2017, <http://www.clcrockcliffe.ca/en/content/history>.

<sup>96</sup>

<sup>97</sup> "History," CLC Rockcliffe Lands: Redevelopment web site, accessed September 21, 2017, <http://www.clcrockcliffe.ca/en/content/history>.

How it informs the thesis and design:

The program choice for veteran housing at CFB Rockcliffe is fitting to the site's original use as a military base, yet this program was not originally included in the design. Multifaith Housing Initiative were the ones who initially approached CLC on incorporating the veteran housing to the development as it was not originally part of the strategy.<sup>98</sup> This site is an example of where the potential use of vacant federal land for housing could have proven useful as a financial strategy. The charity's website shows that they are also still accepting funding donations for this project, and it can be assumed that the veteran housing is not a larger project due to a lack of funding.

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<sup>98</sup> Michelle Nash, "CFB Rockcliffe plans \$2.3M veterans' house," OttawaCommunityNews.com, November 13, 2014, accessed September 21, 2017, <https://www.ottawacommunitynews.com/news-story/5027516-cfb-rockcliffe-plans-2-3m-veterans-house/>.

A local news article reported that the project would cost \$2.3 million in total with \$1.5 million going to land acquisition alone.<sup>99</sup> If the government had already implemented their strategy to use vacant federal lands for affordable housing, the outcome of this project could have been more beneficial to community needs. If the cost of land acquisition had been less, or non-existent, the not-for-profit charity organization would have been able to put all of their funding towards creating more veteran units and therefore helping more people in need.

The development of CFB Rockcliffe also shows the missed opportunity of reusing the existing buildings on the site. An entire subdivision and military base were demolished in

<sup>99</sup> Michelle Nash, "CFB Rockcliffe plans \$2.3M veterans' house," OttawaCommunityNews.com, November 13, 2014, , accessed September 21, 2017, <https://www.ottawacommunitynews.com/news-story/5027516-cfb-rockcliffe-plans-2-3m-veterans-house/>.

order to create the new development. This generated a large amount of waste and increased the embodied carbon and energy of the site. The existing buildings could have been incorporated into the new plan for the neighbourhood. Even if all of the buildings were not preserved, it would have still been a step in the right direction.

#### Design Guidelines Taken from Precedent

- The incorporation of financial planning for the use of vacant federal lands for affordable housing will allow for more units dedicated to affordability.
- The reuse of existing buildings on the site needs to be part of the redevelopment.



Figure 10: CFB Rockcliffe proposed development area



Figure 12: Original housing at CFB Rockcliffe



Figure 11: Illustration of proposed veteran housing

## C: MONMOUTH PARK PLACE

Year: 1983

Location: Omaha, Nebraska, USA

Program: School building adapted to apartments

### Description:

The Monmouth Park School was originally built in 1904 in Omaha Nebraska by the nationally recognized architect Thomas Kimball.<sup>100</sup> The school originally contained 17 classrooms and an auditorium; the north and west wings were added to the school in 1908. The building was put onto the American National Register for Historic Places for its architectural significance. Shortly after the school closed, it

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<sup>100</sup> Richard L. Austin, *Adaptive Reuse: Issues and Case Studies in Building Preservation*, Edited by David G. Woodcock, W. Cecil Steward, and R. Alan Forrester, New York: Van Nostrand Reinhold Company, 70.

was redeveloped into an apartment building in 1983.<sup>101</sup> The renovation process called mostly for the interior of the building to be reconfigured and left the exterior of the building relatively unmodified. Minimal exterior changes allowed for the historic character of the structure to remain intact.<sup>102</sup> The interior classroom configuration influenced the size and orientation of the new apartment units; some units were expanded in size if they were not constrained by the original load-bearing walls.

### How it informs the thesis and design:

The reuse of school buildings for housing has been a prevalent archetype for several decades. The interior classroom configuration potentially allows for an easier reuse as housing

<sup>101</sup> Ibid.

<sup>102</sup> <sup>102</sup> Richard L. Austin, *Adaptive Reuse: Issues and Case Studies in Building Preservation*, 73.

units due to the consistency in room size the and double-loaded corridor arrangement. A similar design strategy for new housing could be executed at the Federal Study Centre as there are several buildings with classroom configurations. While the archetype stands true, there are some differences between the conversion of schools during the 1980s and the conversion of a modern school complex. Many of the schools converted held much appreciated qualities such as higher ceilings. The conversion of a post-war school is still not as common and will need to consider different characteristics while facing different challenges.

#### Design Guidelines Taken from Precedent

- A classroom layout allows for an easier conversion into housing units.
- Post-war buildings have different qualities in comparison to older schools and these differences will need to be considered.



Figure 14: Monmouth Park School

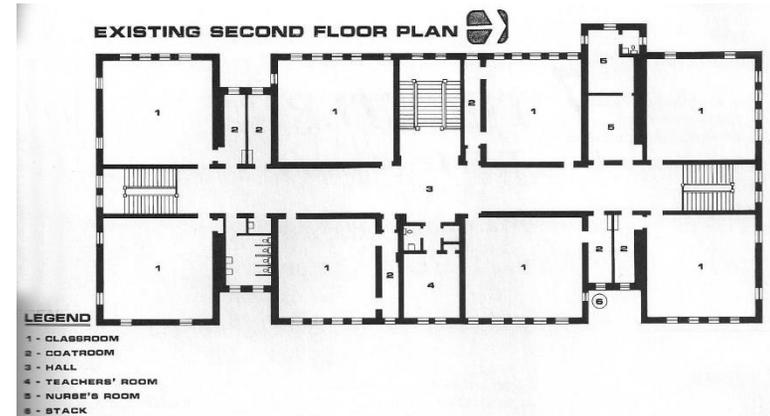


Figure 15: Original 2nd floor plan of school



Figure 13: 2nd floor plan as apartments

## D: BOOTH STREET

Year: 2018 (Still in the planning process)

Location: Ottawa, Ontario, Canada

Program: adaptive reuse of a FHBRO recognized building complex to a mixed-use housing development

### Description:

The Booth Street Campus is located between Booth Street and Rochester Street close to Little Italy in Ottawa. The complex of buildings was created over a span of time between the late 1920s to the end of the 1960s. Originally, the cohesive complex of offices and laboratories was created for several departments

of government including Natural Resources Canada and Energy, Mines and Resources.<sup>103</sup> Five of the seven buildings on the site are also recognized by FHBRO for their historical and architectural value.<sup>104</sup> The site was vacant for several years until Canada Lands Company (CLC) acquired the 2.5 hectare site in October 2015.<sup>105</sup> CLC plans to redevelop the site into a mixed-use housing development and is currently in the planning stage of this process. As of January 2018, CLC hosted the first public consultation for the master plan. Community feedback included the hopes for amenities such as a grocery store, small businesses, affordable housing, an art and culture hub, open green space, and family-sized homes

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<sup>103</sup> "Administration Building," HistoricPlaces, accessed February 18, 2018, <http://www.historicplaces.ca/en/rep-reg/place-lieu.aspx?id=11137&pid=0>.

<sup>104</sup> Canada Lands Company, "Booth Street Information Meeting" (Booth Street Information Meeting, Ottawa), accessed February 18, 2018, <http://en.clc.ca/property/522>.

<sup>105</sup> "Booth Street: Ottawa, Ontario," Canada Lands Company, accessed February 18, 2018, <http://en.clc.ca/property/522>.

with 3 bedrooms.<sup>106</sup> There was also public interest in maintaining the “heritage look” of the site. CLC also echoes this sentiment on their website for the Booth Street development stating that a heritage strategy will look at “reintegrating some buildings, facades, and elements”. This will be done in consultation with the City of Ottawa as part of the master plan.

How it informs the thesis and design:

The circumstances revolving around the Booth Street Campus are similar to that of the Federal Study Centre. Both sites are federally owned campuses that have several FHBRO recognized heritage buildings that will be adapted for housing purposes. Both sites also remained vacant for several years. The Booth Street Campus provides an example for what could

potentially happen at the Federal Study Centre. The community feedback session held by CLC also gives a good insight into what kind of housing needs Ottawa currently faces. Previous research on the need for affordable housing and family-oriented units in Ottawa is further strengthened by the comments from the community. A similar program of open green space, affordable housing, and community amenities will be implemented in the design case study for the Federal Study Centre.

Currently, initial drawings for the Booth Street Campus redevelopment show some of the existing buildings being demolished in favour of new high-rise towers or open green space. As there is no official plan for the site yet, there is still

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<sup>106</sup> CBC, "Designs revealed for former Natural Resources HQ on Booth Street," CBC News, February 16, 2018, accessed February 19, 2018,

<http://www.cbc.ca/news/canada/ottawa/booth-street-ottawa-design-plans-1.4538267>.

no final decision on which buildings will be kept and which buildings, if any, are demolished. In the best interest of heritage conservation and sustainability, it could be argued that as many existing buildings should be kept as possible. This type of design rationale will be carried out in the master plan of the Federal Study Centre, which will look at demolition as a last resort.

#### Design Guidelines Taken from Precedent

- Community needs should be considered when programming the uses of the site.
- Affordable housing and community amenities are important aspects that need to be included in the programming of a large housing development.

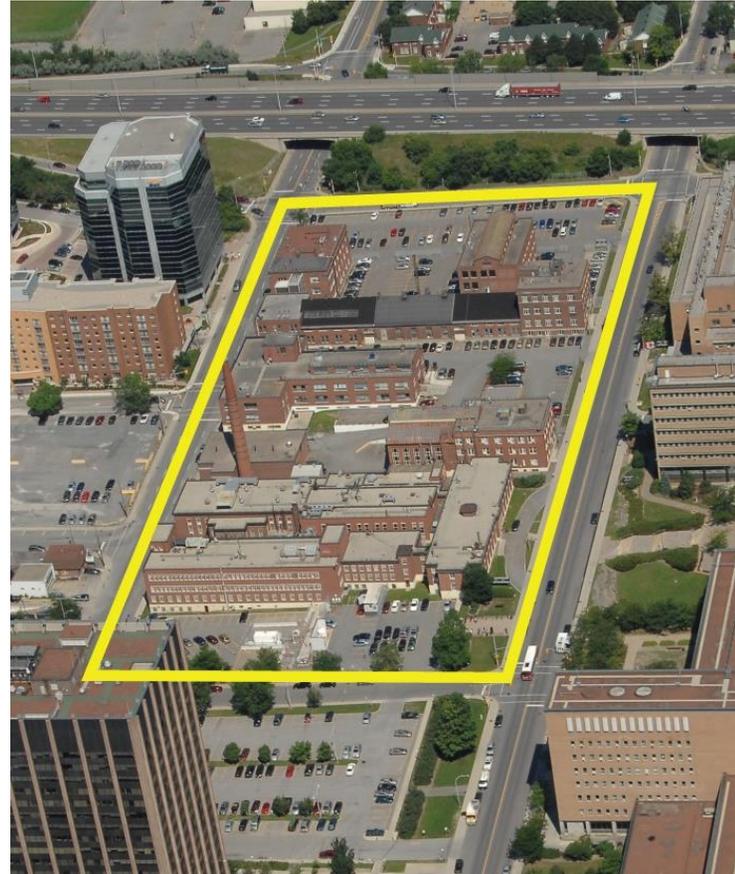


Figure 16: Existing Booth Street Campus



Figure 17: future plan of site with existing buildings in red



Figure 18: Artist rendering of future development with high-rise towers

## SITE ANALYSIS

This section will analyze the chosen site of the Federal Study Centre through the related regulations pertaining to the site, the site's history, its heritage significance, and its surrounding context, in order to create a more informed design.



Figure 19: Entrance to the campus

## SITE INFORMATION

Address: 1495 Heron Road, Ottawa

Property Size: 7.3 hectares

Number of buildings: 12

Built: 1963-1965

Architect: Tim Murray, Murray and Murray Associates

Original Owner: Sisters of the Congregation of Notre Dame

Original Use: Boys' high school, girls' high school, convent, and novitiate

Subsequent Owner: Government of Canada (1973)

Subsequent Use: Facility for language and other training

Current Owner: Public Services and Procurement Canada

Floor area: 14,800 square metres

## SITE HISTORY

As part of the FHBRO disposal process for the site, an in-depth heritage recording report was created by Heritage Conservation Services of PSPC. The majority of the following information on the history of the site has been summarized from Appendix C of the heritage recording report. The appendix was specifically created by historian Kate MacFarlane as the FHBRO Historic Report. The Site history also draws on a few local news sources to fill in some of the information gaps.

The site at 1495 Heron Road in Ottawa was originally commissioned by the Sisters of the Congress of Notre Dame

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<sup>107</sup> Canada, Public Works and Government Services Canada, Heritage Conservation Directorate, Federal Study Centre "The Campanile Campus" Heritage Recording Report, By John Gregg and Christian Ouimet, Ottawa, ON, 2014, 738.

to become an educational complex that would host a boy's and girl's high school, a convent, a novitiate, and dormitory space for the staff on campus. The Sisters of the Congress of Notre Dame were a religious order first established in Montreal in 1859 and are known as the first religious order founded in Canada. The campus was originally commissioned in order to expand and update their educational facilities to meet the changing demands of the modern secondary school education system.<sup>107</sup> Their previous location in Ottawa was a 19<sup>th</sup> century convent and boarding school on Gloucester Street that they had occupied for almost 100 years.<sup>108</sup> Their decision to modernize their facilities was also tied to the Catholic reforms

<sup>108</sup> Lisa Gregoire, "Campanile church in Alta Vista now sits like a ghost town, its future uncertain," Ottawa Magazine, October 13, 2017, accessed October 14, 2017, <https://ottawamagazine.com/homes/design/campanile-church-in-alta-vista-now-sits-like-a-ghost-town-its-future-uncertain/>.

of Vatican II, an era of the church that emphasized a new way of communal worship and a reconstruction of previous belief systems. This led to a surge in church constructions between the 1960s and the 1970s to reflect the reforms.<sup>109</sup>

The Sisters hired local architect Tim Murray and his firm Murray and Murray Associates to design the entire campus and they remained very involved throughout the whole design process. Murray went on to become a well-known architect in the city of Ottawa and this was one of his early notable projects. The site, known commonly as the Campanile Campus, was used as an educational facility starting from its construction in 1965 until 1973. After being there for only 8 years, the Sisters had to sell the campus due to a lack of funding. At the time, the

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<sup>109</sup> Heritage Conservation Directorate, Federal Study Centre "The Campanile Campus" Heritage Recording Report, 744.

province of Ontario did not fund grades 11 to 13 for Catholic schools, so private tuition had to be used to cover the teachers' salaries and the convent operations.<sup>110</sup> The rising costs and the fact that fewer women were becoming nuns also led to a decrease in available teaching staff for the campus.

In 1973 the government of Canada purchased the Campanile Campus with the intent of using it as a language training facility. Starting in the 1960s the public service department saw a rapid increase of employees, which created a need for larger facilities. This also created a need for more training facilities for new employees. In 1969 the first Official Languages Act of Canada was passed. It signified the equal recognition of English and French as official languages

<sup>110</sup> Gregoire, "Campanile church in Alta Vista now sits like a ghost town, its future uncertain."

throughout the federal administration.<sup>111</sup> This meant that all unilingual staff required mandatory language training in the other language and new training facilities needed to be created. In the 1970s Public Works built and acquired a number of properties that became educational or training facilities, the Campanile Campus being one of them. The Campanile Campus was renamed the Federal Study Centre by the government and was initially used by the Ministry of Transport for language and other training.<sup>112</sup> The government's rapid expansion during this era has led to a typology of educational centres being taken over as government training facilities. There are several other buildings that fit within this category

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<sup>111</sup> "Understanding your language rights," Office of the Commissioner of Official Languages, January 02, 2018, accessed January 08, 2018, [http://www.officiallanguages.gc.ca/en/language\\_rights/act](http://www.officiallanguages.gc.ca/en/language_rights/act).

such as the Ecole Polyvalente, now know as Centre Asticou, and the Carson Road Complex.

The Federal Study Centre was used as a training facility up until 2014 when the building was declared surplus. The site is currently closed to the public, except for St. Patrick's Secondary School, which is located on the southwest corner of the complex. This separate school was not sold to the government as part of the campus in the 1970s. All of the other Campanile Campus buildings remain empty except for Pavilion I which is being borrowed by St. Patrick's Secondary School as supplementary space for their cafeteria.

<sup>112</sup>Heritage Conservation Directorate, Federal Study Centre "The Campanile Campus" Heritage Recording Report, 738.

The following aspects are considered to be of historical significance in the FHBRO heritage character statements:

- The building most associated with the Sisters of the Congress of Notre Dame
- Association with the expansion of Ottawa and the expansion of the federal government
- Association with Tim Murray and Murray and Murray Associates

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<sup>113</sup>Mert Nezih Rifaioglu and Neriman Sahin Güçan, Understanding and preserving spirit of place by an integrated methodology in historical urban contexts, In: 16th ICOMOS General Assembly and International

## SPIRIT OF PLACE

A place is more than just its geographical location and the collection of buildings residing in its boundaries. A place tends to have an intangible quality to it that cannot be physically measured, “there exists a ‘sprit’ which cannot be described by analytical or scientific methods.”<sup>113</sup> This intangible aspect of a place is known as “spirit of place”. Spirit of place can be defined as “the substance of place, the formation of the generic order of place and its interrelations, which forms the urban context, the origin of the place’s existence, and the dialectic link in between the place and its inhabitants.”<sup>114</sup> It is a unique quality that is created through the course of history and is tied to the people who live in and use a space.

Symposium: ‘Finding the spirit of place – between the tangible and the intangible’, Quebec. 29 September – 4 October 2008, 2.

<sup>114</sup> Ibid.

While visiting the Campanile Campus it was easy to notice that there is a very distinct spirit of place for the campus. There is a sense of serenity encapsulating the whole site. Shielded by a row of trees and a large lawn, the Campanile Campus is sheltered from the busy noises of the main road. Walking through the campus it is easy to forget that the urban context exists around the site and it is almost too easy to image the campus located in a secluded forest. There is also a sense of connectivity between the buildings which is visually articulated through the interwoven courtyards and the cohesive material palette. It is a simple task to picture what the site was like when it was inhabited both by the Sisters of the Congregation of Notre Dame and by the federal government.

Small courtyards protected by brick screens suggest the image of a nun sitting on the outdoor bench in quiet contemplation. The paths outlining the courtyards can be imagined with government workers walking back and forth between buildings, greeting each other as they go. Even the time as an abandoned complex will always be remembered when thinking about the site. Long after the site has been adapted to another use, people will probably still remember its jungle-like courtyards and the calls of crows echoing between the buildings. The campus feels as if nature has reclaimed the space, courtyards are filled with overgrown plants and animals can be heard running and chattering from their hiding places in the bushes.

The spirit of place for the Campanile Campus suggests several aspects that influence the design of its adaptation.

They are as follows:

- Quietness and distance from city traffic
- Encounters between people through pedestrian paths
- Framed outdoor spaces and controlled views



Figure 20: Pavilion A during the quiet of winter



Figure 21: Overgrown courtyard of the campus showing pavilion G and the folly with the chapel roof in the background

## CHARACTER DEFINING ELEMENTS

A character defining element is described in the Standards and Guidelines for the Conservation of Historic Places in Canada as “the materials, forms, location, spatial configurations, uses and cultural associations or meanings that contribute to the heritage value of an historic place, which must be retained to preserve its heritage value.”<sup>115</sup> Character defining elements are unique to each individual site and are essentially any aspect of a site that contributes to its historic meaning, or its meaning to the community. The following images show character defining elements of the Campanile Campus, specifically detailing aspects of the campus that clearly show its relationship to modern architecture. These

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<sup>115</sup> Standards and Guidelines for the Conservation of Historic Places in Canada: a federal, provincial and territorial collaboration, Second ed. (Ottawa: Parks Canada, 2010), 5.

elements are based on the description for the campus that can be found on The Canadian Register for Historic Places (CRHP). CRHP is an online tool that provides a single location for information on all historic places in Canada and describes their heritage value at the local, provincial, territorial, and national levels of recognition.<sup>116</sup> For the Campanile Campus, the character defining elements consist of attributes that are relevant to the entire campus. The only pavilion which has a unique set of character defining elements is Pavilion A.

<sup>116</sup> "About Us," Canada's Historic Places, accessed March 2, 2018, <http://www.historicplaces.ca/en/pages/about-a-propos.aspx>.



Figure 22: A strong visual and physical relationship between courtyards and pavilions

Each pavilion of the site is organized around an outdoor courtyard. These courtyards act as central gathering spaces and modes of circulation for each building. There is no pavilion on the campus which is not located beside a courtyard. For most of the pavilions, these courtyards are also where the main entrance to each pavilion can be found.



Figure 23: Horizontal and vertical balance between elements:

This picture of the back of pavilion G shows how a balance is struck between the horizontal and vertical elements of the façade. The horizontal form of the building along with the horizontal bands of concrete across the façade are contrasted by the slim vertical bands created by the windows.



Figure 24: Clear expression on the exterior of the structural systems

In this image of pavilion E and F, the structural concrete system can clearly be understood from the outside of the building. The concrete columns on the ground floor help to hold up the top 2 floors from the ground floor which appears to be floating below due to a band of clerestory windows. The horizontal bands of concrete throughout the façade also helps to differentiate where one floor stops and another begins.



Figure 25: Horizontal bands of windows for the illusion of floating, along with deep overhangs

Horizontal bands of windows and deep overhangs are a stylistic combination made famous from the modern architecture movement. The uninterrupted band of horizontal windows located where the walls meets the ceiling in Pavilion D is combined with a roof that has a deep overhang. This allows for the illusion that the roof is floating above the walls from afar.



Figure 26: Alternating solids and voids - a combination of smooth concrete, rustic brick, and deeply recessed windows extending from floor to ceiling

As exemplified by pavilion K, the vertical rows of windows in combination with the brick walls in between create a pattern of solids and voids along the façade. From the interior, the windows sit in a deep recession framed by brick. This material combination of concrete, brick, and glazing is seen throughout the entire campus.



Figure 27: The chapel as the focal point of the complex with visibility from all courtyards

Situated at the centre of the campus, pavilion A (the former church) is recognized as the focal point of the site. In comparison to the other pavilions on campus, pavilion A is distinctly different in form. Its roof is the only one to be made from copper, and tall and shaped in a unique way. Due to its height and size, the peak of the roof is visible from all of the courtyards on campus.

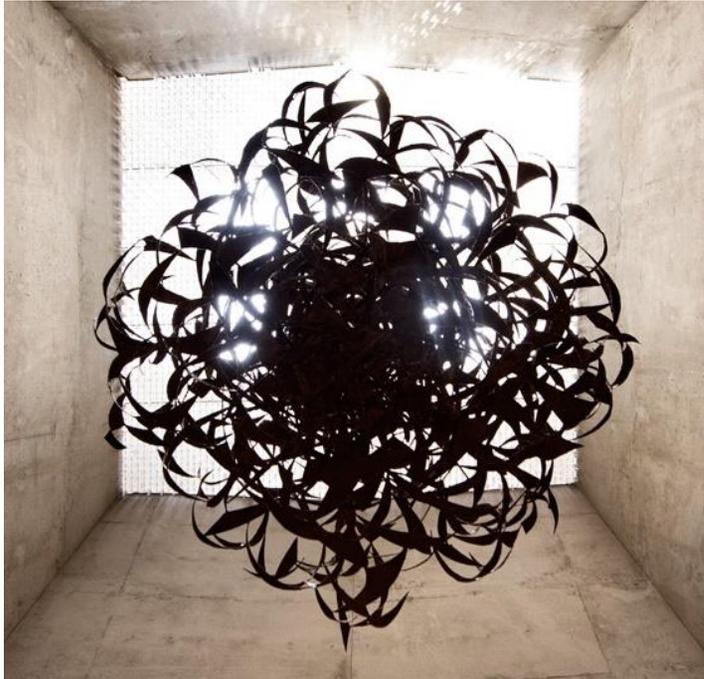


Figure 28: Original interior decorative programs in the chapel

This sculpture titled “Manna from Heaven” is suspended from the skylight in the interior of the chapel. The sculpture was specially commissioned for the campus by the bronze sculptor Gerard Trottier.<sup>117</sup>

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<sup>117</sup> Lisa Gregoire, “Campanile church in Alta Vista now sits like a ghost town, its future uncertain”.



Figure 29: Original interior decorative program that reflects the religious use of the building

This lattice brick wall is located at the edge of the chapel in Pavilion A. Architect Tim Murray designed these walls which allowed nuns to slip into mass silently without disturbing the service if they were late.<sup>118</sup>

<sup>118</sup> Ibid.

## CURRENT CONDITIONS

The site was visited on 3 separate occasions. The first 2 occasions, in October and December of 2017, were external site visits while the one in January of 2018 was an internal building visit. During these visits a visual assessment of the condition of the campus was briefly conducted. All of the buildings are constructed of a similar material palette of clay brick and concrete with wooden windows, and all of the buildings are showing similar signs of deterioration. The following information on the condition of the building is informed by what could visually be inspected during the site visits.

Being left vacant for the past 4 years has taken a visibly noticeable toll on the Campanile Campus. The exterior of the buildings shows general deterioration to the brick, concrete, and the windows. The bricks show signs of spalling and

efflorescence, especially at rows closer to the ground, which come in more contact with salts and moisture. Some walls have areas of de-bonded mortar, cracked bricks, and even areas where bricks have fallen off of the wall. The concrete has areas of efflorescence and ferric staining caused by metal elements oxidizing onto the surface. There are also noticeable moisture stains, cracks and areas of concrete where fragments have detached. The wooden windows have noticeable deterioration in the form of wood rot, cracking, peeling paint, and broken glass window panes.

The interiors of the buildings remain relatively intact and in fair condition. During the interior site visit, pavilions A, B, C, L, and K were visited and the interpretation of the interior condition is based off of these pavilions. The floors, ceilings, and walls of all rooms were structurally stable. These elements looked to be in good condition with minimal visible staining,

cracking, or broken pieces. Some areas of the floors and walls did have noticeable moisture damage. The damage to the wooden windows was also evident from inside the building. In some cases, the frames had rotted to the point that there was a buildup of deteriorated wood on the floor in front of the window in question.

When inquiring about the condition of the other pavilions, the site custodian made it known that there was a reoccurring problem with mould. They stated that pavilions D, E, and F were in bad condition due to seasonal mould growth. The underground tunnels connecting to these pavilions likewise needed to be sealed off to prevent the spread of mould by air. Pavilion I also faced some mould issues but was recently remediated because it is being borrowed by the St. Patrick's Secondary School as overflow cafeteria space.

The current condition of the buildings is most likely due to the age of the campus and a lack of maintenance. During the current period of vacancy only minimal maintenance has occurred on the site such as the heating of the buildings during winter in order to prevent water pipes from bursting, and the remediation of mould. When comparing photos taken of the campus today to photos taken for the heritage recording report done by Heritage Conservation Services in 2014, most of these forms of deterioration already existed on the site. This means there was possibly a lack of maintenance to all of the buildings during their lifespan, potentially due to a lack of funding or resources. When inquiring about the condition of the campus, a Building Condition Report (BCR) was not located. The BCR is the PSPC starting point for planning maintenance, and without one it is possible that the proper maintenance procedures for the site were not carried out.

There are some areas of deterioration that have rapidly increased during the last 4 years of vacancy. The windows seem to have deteriorated the most. There is more visually noticeable wood rot and cracking, peeling paint, and broken glass on almost all of the windows on the campus. As part of the redevelopment of the site, a rehabilitation level of repair will need to be carried out for all of the existing buildings. Most, if not all of the existing windows will probably need to be replaced due to rot. Masonry will also have to be repaired, repointed or replaced as needed. The interior mould will also have to be addressed in order to provide a healthy and safe environment.

Although various types of problems are visually evident on all of the buildings, the complex is overall in fair condition. All of the buildings remain structurally stable and most of the deterioration is localized to select areas of each building façade. The fair condition of the site, even after several years

of neglect, shows that the buildings and the construction methods used are durable and can withstand damage. The durability of the site further implies that the site should be rehabilitated. Even though deterioration is evident, it is at a level which can be repaired.

A detailed condition inventory of the different types of exterior deterioration noticed on site can be found in the Appendix. Each deterioration is organized by material type and the inventory gives a visual as to what the deterioration looks like on the buildings, what the problem is, and where it is usually found on site. This condition inventory was created by 4<sup>th</sup> year undergraduate students Melissa Lengies and Robin Hoytema as part of their 2018 winter studio.

## MAPPING

A series of maps were created of the existing campus to identify organizational patterns which could be used to influence the master plan for the site.

Figure 30, is used as a reference for the historical uses of the site. When comparing the uses for each pavilion from when the campus was used by the Sisters and by the federal government, most of the spaces were reused for a similar program. As stated in the heritage recording report, the federal government tried to use the spaces with as minimal alterations as possible.<sup>119</sup> Most of the classrooms were once again used as classroom space or converted into office space. Some dormitory space was also kept for visiting employees. Two of the more drastic changes carried out on the site were the conversion of the chapel to a conference and lounge space,

and the conversion of the nuns' residences into office space. This informs the design decision to alter the existing structures as little as possible for the new housing program. It also informs the decision to find the most appropriate use for each pavilion's current configuration.

Figure 31 shows the heights of each pavilion along with the heights of some of the surrounding buildings. Most of the buildings on the campus are 3-storeys high with the surrounding buildings being 2-storey houses. The highest buildings on the campus are pavilions A, C, and K. All three of these buildings range from 4 to 6 storeys in height. The current building heights will be used to guide the heights of the proposed new buildings. Most new buildings will remain in the 3-storey range in order to compliment the existing buildings and keep with the current design scheme where the chapel's

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<sup>119</sup> "Pavilion A," Canada's Historic Places, Accessed October 03, 2017. <http://www.historicplaces.ca/en/rep-reg/place-lieu.aspx?id=13968>.

height reflects its importance on campus. On the other hand, the 6 storey high towers give precedent for higher buildings on the campus. Condominiums and apartments that are 6 to 8 storeys high could be built behind the existing towers. This would allow for the inclusion of higher density housing on site without disrupting the low-rise buildings already on the campus.

The last figure, figure 32, shows the existing circulation patterns on site. The only roads on the campus are pushed to the perimeter of the site, along with the only parking lot. Having all of the vehicular circulation on the edge of the campus allows for a concentration of pedestrian circulation at the centre of the campus. When looking at the entrances to the pavilions, almost all of the entrances are placed within one of the central courtyards. Some pavilions also do not have their own entrances and share one with the neighbouring pavilion through the interconnected walkways. This configuration

directs most of the circulation to the centre of the campus, leaving the pavilions as a barrier towards vehicular traffic. A similar design strategy will be implemented when creating new housing using the space provided by the large parking lot. The vehicular access to the site will remain along the perimeter while new buildings will be arranged around interior courtyards. These courtyards will then be linked together through pedestrian walkways.

#### *DESIGN GUIDELINES TAKEN FROM TOPIC*

- Heights for new proposed buildings to remain within the 3-storey range for most of the site but can reach a 6-storey range towards the north end of the site.
- Circulation within the core of the campus should be reserved as pedestrian-only and all vehicular traffic should be limited to the perimeter of the campus.

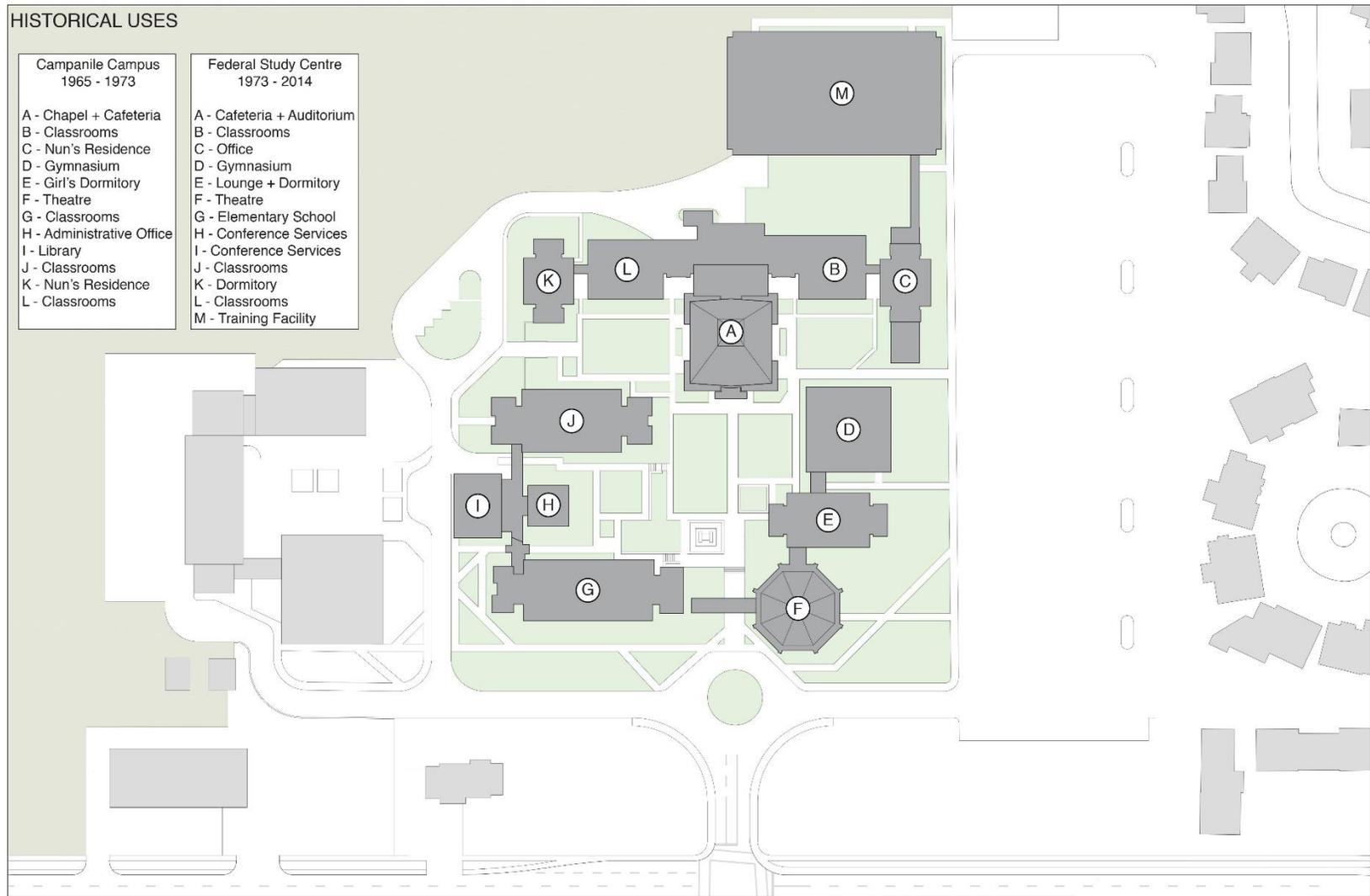


Figure 30: Site map showing the different uses of each pavilion during its different ownerships

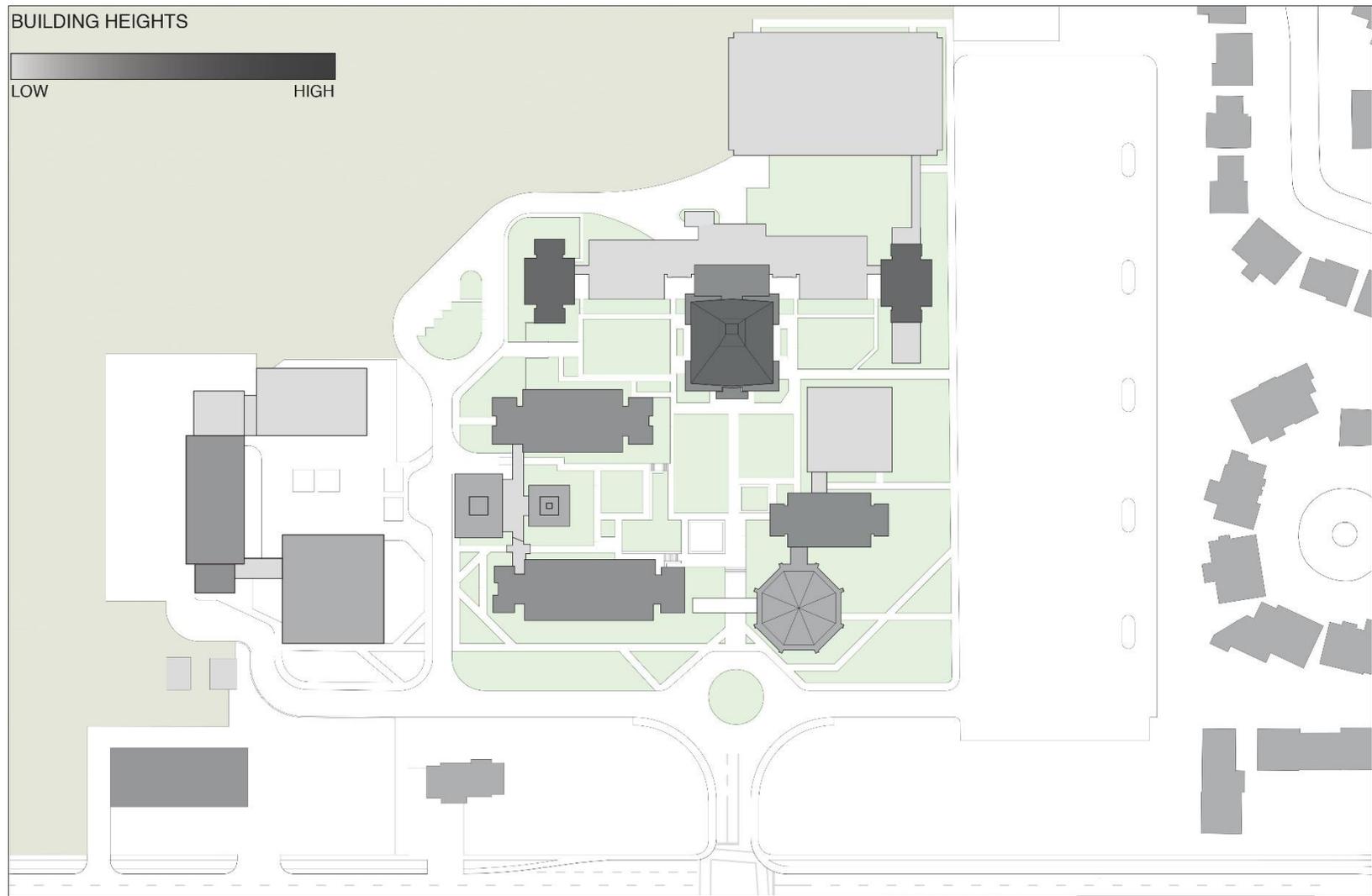


Figure 31: Site plan showing building heights of the campus and surrounding buildings

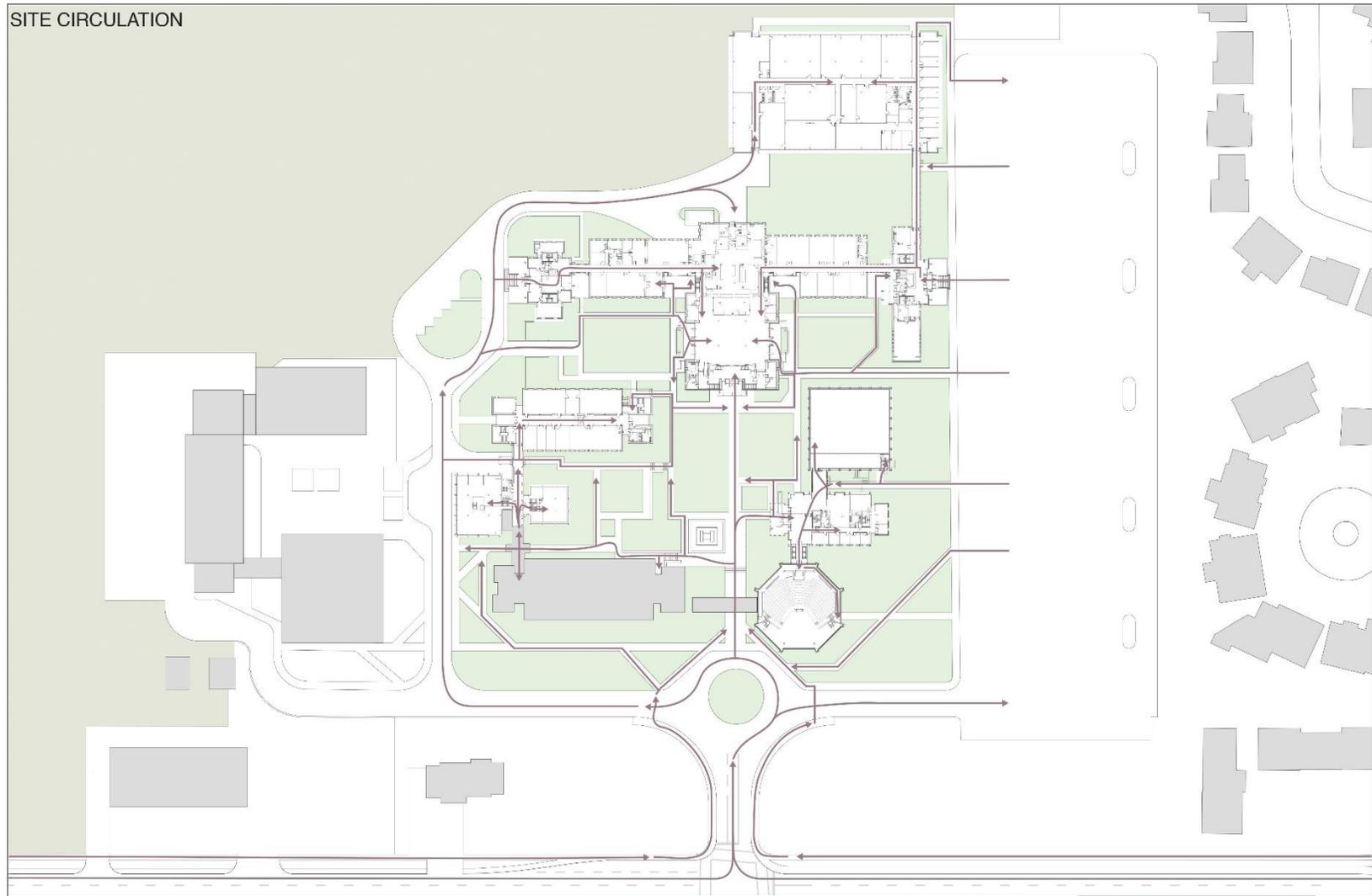


Figure 32: Site plan showing the ground floor circulation patterns

## NEIGHBOURHOOD STUDY

When designing for the adaptive reuse of the Campanile Campus, a greater context must also be taken into consideration. This section looks at the surrounding neighbourhood area and how its qualities can help to influence a better design strategy for the site.

### *CITY OF OTTAWA AND VACANT BUILDINGS*

As part of the site analysis, the City of Ottawa's bylaws were analyzed in order to better understand how vacant buildings are dealt with. Within the breakdown of the jurisdiction and responsibilities between federal, provincial, and municipal levels of government, the municipal government has authority over land-use planning and regulation and building

regulations.<sup>120</sup> As part of their authority over land-use planning and regulation, bylaws are created by a municipality as a set of standards for the maintenance of properties.<sup>121</sup>

As the Federal Study Centre is a property owned by the federal government, it is only subject to follow federal rules and does not strictly speaking need to abide by city bylaws. Due to a hierarchy of jurisdiction, laws of a lower level government cannot apply to a higher level of government.<sup>122</sup> While the federal government does not need to follow city bylaws, the Federal Study Centre offers a unique set of circumstances. When it was originally constructed, it was not owned by the federal government and therefore would have had to follow city bylaws at the time. Now that the site is being sold again, it will

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<sup>120</sup> Andrew Sancton and Robert Andrew. Young, *Foundations of governance: municipal government in Canada's provinces* (Toronto: University of Toronto Press, 2009), 10.

<sup>121</sup> By Law & Regulatory Services, "Property Standards (By-law No. 2013 - 416)," Ottawa, February 2016, accessed September 30, 2017,

[http://documents.ottawa.ca/sites/documents.ottawa.ca/files/2013\\_416\\_en.pdf](http://documents.ottawa.ca/sites/documents.ottawa.ca/files/2013_416_en.pdf), 1.

<sup>122</sup> Judy Jeske, "Ontario Building Code" (lecture, Carleton University, Ottawa, September 21, 2017).

no longer be within the federal jurisdiction and will once again be subject to city bylaws. It is not uncommon for the federal government to sell off properties that are no longer needed. Therefore, it would be good practice for the federal government to follow the local city's bylaws as the buildings they own may be sold in the future and become subject to the local bylaws. This practice would allow for a smoother transfer and reuse of buildings as properties are potentially transferred to other levels of government or the private sector.

In the case of the Federal Study Centre, as a vacant property it would need to conform to bylaws pertaining to vacant buildings. The issues that are addressed in the bylaws help to give an idea as to what the city deems important when dealing with vacant properties. The City of Ottawa Property

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<sup>123</sup> By Law & Regulatory Services, "Property Standards (By-law No. 2013 - 416)," Ottawa, February 2016, accessed September 30, 2017, [http://documents.ottawa.ca/sites/documents.ottawa.ca/files/2013\\_416\\_en.pdf](http://documents.ottawa.ca/sites/documents.ottawa.ca/files/2013_416_en.pdf), 49.

Standard Bylaw pertaining to vacant properties typically addresses the aesthetics of the site along with safety concerns for the general public. Within this bylaw there is a distinction between commercial and residential properties. It also addresses issues surrounding the health and safety of people on the site or passing by, along with a few regulations that focus on the aesthetics of the property. Some of the requirements include:

- Vacant buildings or land need to be kept clean from any debris or objects that might create an accident<sup>123</sup>
- Foundation walls should be maintained in good repair and be structurally sound<sup>124</sup>
- Exterior walls should be maintained to prevent deterioration due to weather or vermin, and shall consist of materials commonly used as building components<sup>125</sup>

<sup>124</sup> Ibid, 53.

<sup>125</sup> Ibid, 54.

The city also deals with vacant buildings through their tax rebate programs. Currently, there is a 30% tax rebate for vacant buildings that can be applied to commercial or industrial properties. The rebate was originally set in place to help commercial and industrial business owners who were having trouble finding tenants. It offered a form of compensation for the vacant units that were being included in business occupancy tax calculations. The rules state that a business is able to claim this rebate if parts of their properties have been vacant for a consecutive 90 days.<sup>126</sup> Typically the city budgets \$6.5 million annually for the program, but in 2016 they spent \$17 million on this rebate program alone. Due to the fact that the rebate program constantly goes over budget, city

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<sup>126</sup> Jon Willing, "Ottawa dished out \$17 million worth of municipal tax breaks for vacant commercial properties," Ottawa Sun, April 26, 2017, accessed August 30, 2017, <http://ottawasun.com/2017/04/26/ottawa-dished-out-17-million-worth-of-municipal-tax-breaks-for-vacant-commercial-properties/wcm/6e210aec-70b9-43ec-97ff-3608d66aac32>.

councillors have voted to finally get rid of it by 2019. The program is slowly being phased out until then by decreasing the amount available for the rebate each year.

Beyond the maintenance of properties, the City of Ottawa does not have any other requirements that vacant buildings need to meet. For example, they don't set any limits for how long a property can remain in a state of vacancy. Indeed, from local news articles, it has also become evident that it is hard for the city to enforce the existing regulations they have already set in place. There are currently not enough bylaw officers to check in on every property.<sup>127</sup> This means that inspectors only become involved when public safety is endangered because of a property. News articles also bring to

<sup>127</sup> David Reevely, "Ottawa Citizen: City of Ottawa set to clean up derelict properties," Acorn Canada, , accessed August 04, 2017, <http://www.acorncanada.org/content/ottawa-citizen-city-ottawa-set-clean-derelict-properties>.

light that the public has a very low opinion of vacant properties. People believe that these empty spaces attract drug users, prostitutes, and other criminal activity.<sup>128</sup> From a financial standpoint, vacant buildings are also not beneficial to the city. While the tax rebate was initially created to balance out changes to the overall tax structure, it has also become a financial burden that allows owners to leave their properties vacant for extended periods of time. Instead of spending \$17 million on rebates, the money could have been applied to other proactive programs in the city that help with business improvement, infrastructure, or housing.

#### *EVOLUTION OF THE AREA*

To better understand how the surrounding neighbourhood developed around the Campanile Campus, aerial images from the website GeoOttawa were analyzed in chronological order. Any changes noticed in the neighbourhood are highlighted in red.

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<sup>128</sup> "City of Ottawa getting tough on derelict properties," CTV News Ottawa, April 18, 2013, , accessed August 30, 2017, <http://ottawa.ctvnews.ca/city-of-ottawa-getting-tough-on-derelict-properties-1.1243961>.



Figure 33: Aerial image from 1965

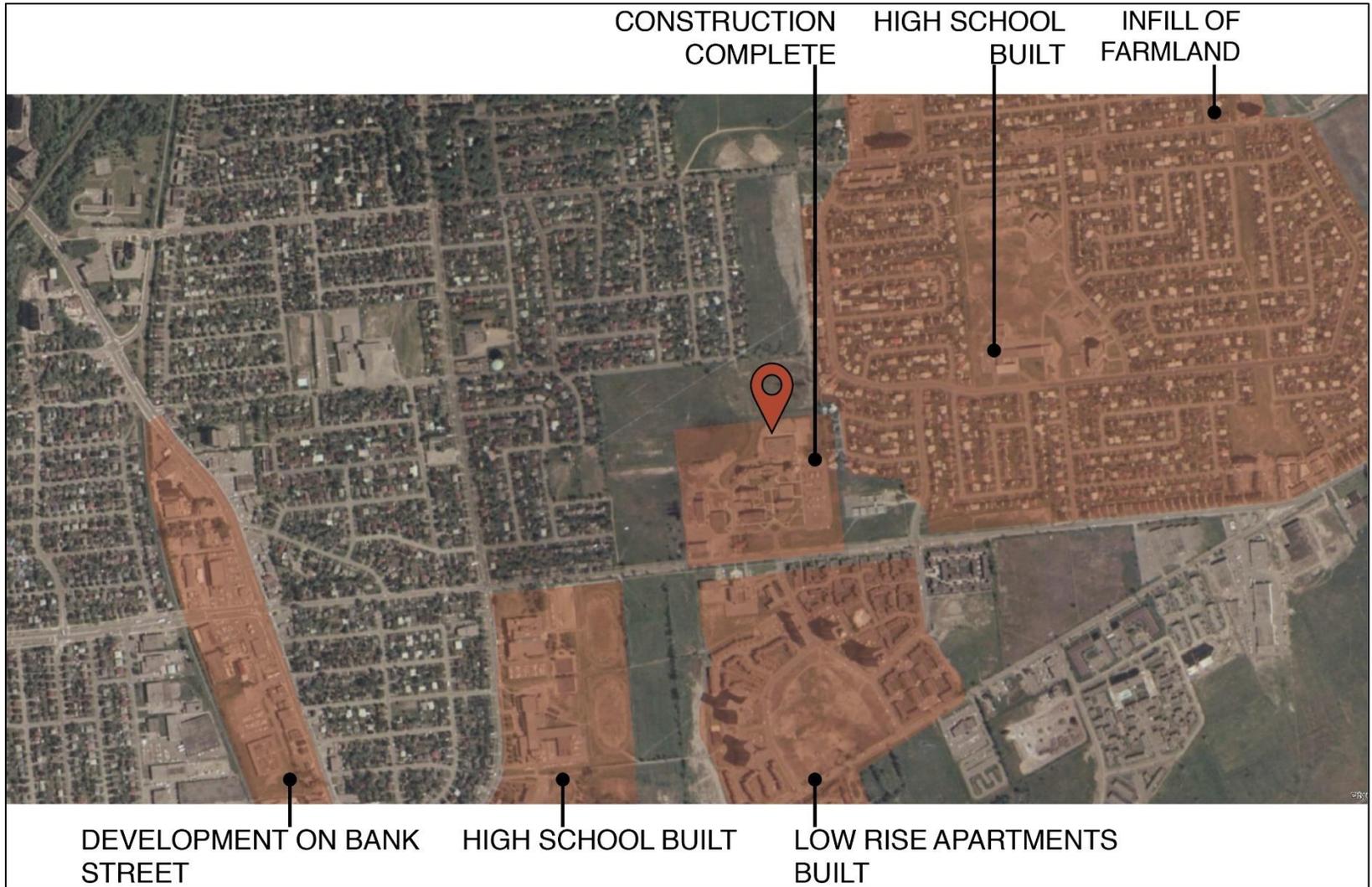


Figure 34: Aerial image from 1976



COMMERCIAL DEVELOPMENT

INFILL OF  
FARMLAND

Figure 35: Aerial image from 2002



Figure 36: Aerial image from 2008



Figure 37: Aerial image from 2015

PARK SPACE AND LOW  
DENSITY OF SITE REMAIN

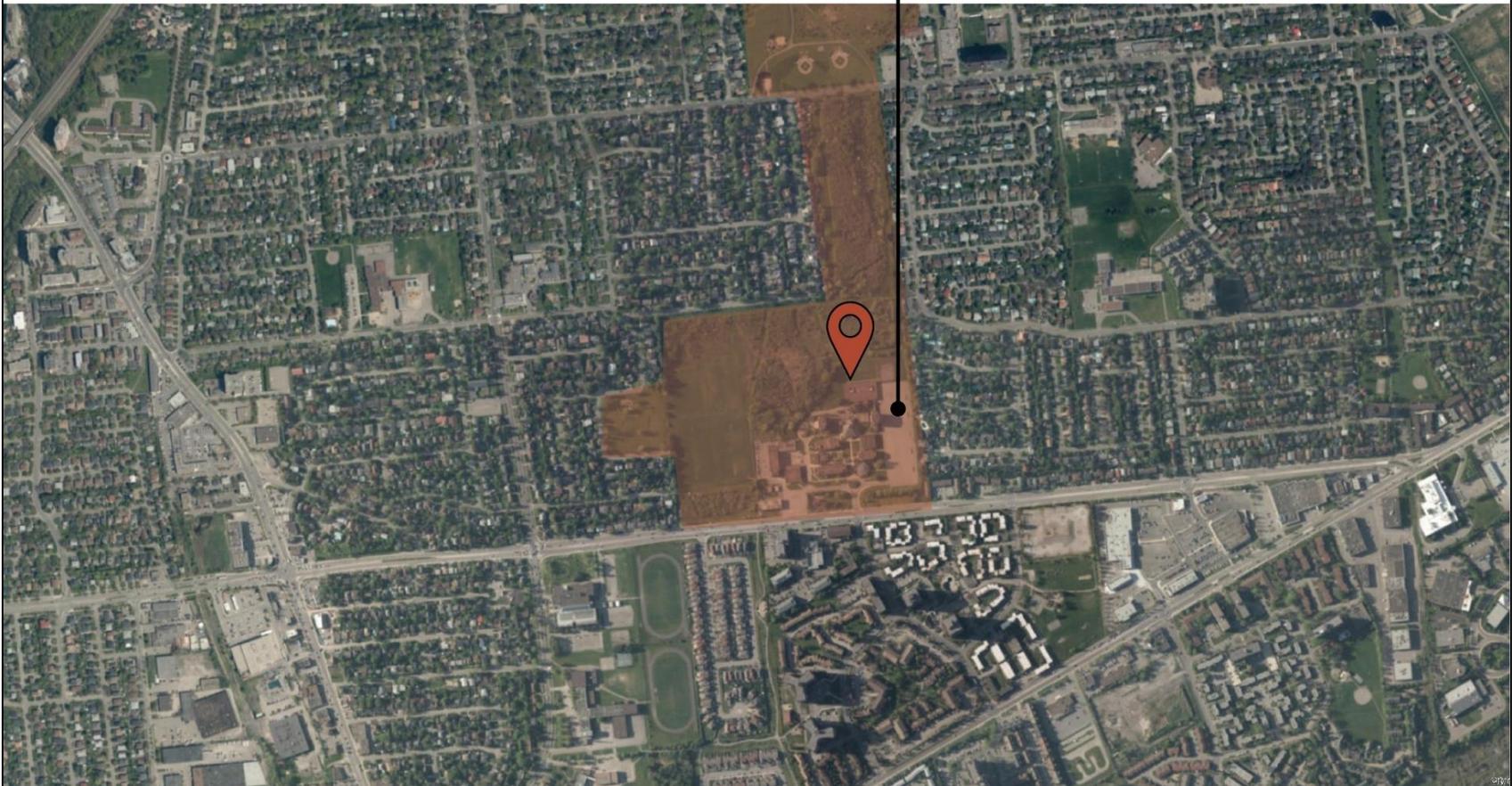


Figure 38: Aerial image from 2017

### *NEIGHBOURHOOD STATISTICS*

As part of the process to create a program for the site that targets the needs of the community, statistics on the surrounding neighbourhood were analyzed. These statistics were sourced from the project Ottawa Neighbourhood Study (ONS). The Federal Study Centre is located at the border between three neighbourhoods, Billings Bridge/ Alta Vista, Playfair Park/ Lynda Park/ Guildwood Estates, and Ledbury/ Heron Gate/ Ridgemont. The statistics for all three neighbourhoods were analyzed for numbers that stood out because they were vastly different in comparison to the average results for the city. Below is a table summarizing the statistics that are relevant to the thesis from the three neighbourhoods:



Figure 39: The bordering neighbourhoods around the site

<i>Statistic Category</i>	<i>Billings Bridge Alta Vista</i>	<i>Playfair Park Lynda Park Guildwood Estates</i>	<i>Ledbury Heron Gate Ridgemont</i>	<i>Average for Ottawa</i>
<b>% of high-rise apartment</b>	21.7	32.4	42.3	18.5
<b>Number of social and affordable housing units</b>	638	36	1163	229.4
<b>% of population aged under 18 living in low income</b>	11.5	11.6	52.7	16
<b>% of population aged 18-64 living in low income</b>	13.1	7.3	31.3	11.6
<b>% tenant households spending 30% or more of household total income on shelter costs</b>	38	42.1	41.9	38.7
<b>% owner households spending 30% or more of household total income on shelter costs</b>	12.7	8.4	30.9	14.9
<b>% lone-parent families</b>	16.6	14.2	34.4	16.1
<b>% female lone-parent families</b>	13.5	11	29.9	12.8
<b>% immigrants</b>	27.3	23.7	43.8	23.4

Table 1: Statistics on neighbourhoods bordering the Federal Study Centre

Looking at the data in the table, it is clear to see that the Ledbury/ Heron Gate/ Ridgemont neighbourhood stands out the most in comparison to the Ottawa average. The other two neighbourhoods of Billings Bridge/ Alta Vista and Playfair Park/ Lynda Park/ Guildwood Estates have results that are closer to the average for Ottawa. These statistics will influence what types of programs will benefit and fit in with the surrounding communities. For example, the first set of results show that there is already a large number of high rise buildings present. This possibly sets precedence for having taller buildings as part of the development as it would fit in with the surrounding area. The next set of results show that there is a high number of social housing units that already exist to the south and the west of the Federal Study Centre. 52% of the people living in low income situations are also youths. Program wise, this could

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<sup>129</sup> Canadian Housing Observer (Ottawa: Canada Mortgage and Housing Corporation, 2013), 2-12.

mean that more services should be directed towards the benefit of children already living in the area. There is also a higher number of single-parent families, particularly women single-parent families. In 2011, women accounted for 84% of single-parent condominium owners. Some reasons for their choice of housing type were because condos are more affordable than a single-detached home, they are low maintenance, have a higher safety factor, and provide a sense of financial security.<sup>129</sup> The neighbourhood statistics similarly show that a higher percentage of the population are immigrants. Within the last few decades, the pace of immigration has increased dramatically in Canada. Trends show that new immigrants to the country tend to settle mostly in large urban centres while initially choosing to rent for housing.<sup>130</sup> For both of these demographic categories, higher density and more

<sup>130</sup> Canadian Housing Observer (2013), 5-2.

affordable housing types such as apartments and condominiums are the commonly chosen option. In order to accommodate both of these trends, more rental housing in the form of apartments, and more secure and affordable housing such as condominiums should be included as part of the new program for the site.

Another important statistic found on the Ottawa Neighbourhood Study website is the need for childcare in the city. ONS is contracted by the City of Ottawa to provide data related to childcare. Figure 40 shows the number of children waiting for a full fee space on CCRAW by ward. CCRAW stands for "Child Care Registry and Waitlist". A full fee space is a space in a childcare program where the cost of childcare is fully covered by the parent.<sup>131</sup> In this figure, the ward of Alta

Vista is highlighted, with 336 children in the ward waiting for a space. The ward boundaries of Alta Vista contain the Federal Study Centre and all three of the surrounding neighbourhoods. When comparing the results to the other wards of Ottawa, Alta Vista stands out as one of the wards within the core of the city with the highest number of children on the waiting list. All of the other wards that have a higher number of children on the waiting list are on the peripheral of the Ottawa boundaries, and are either suburban or rural areas. Looking at the breakdown of age categories for the children on the waitlist, most of the children in Alta Vista are either infants or School Age children.<sup>132</sup>

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<sup>131</sup> "Welcome to the City of Ottawa Child Care Registry and Waitlist," City of Ottawa Child Care Registry and Waitlist, accessed December 1, 2017, <https://onehsn.com/Ottawa>.

<sup>132</sup> "Child Care September 2016," Ottawa Neighbourhood Study, accessed December 1, 2017, <https://www.neighbourhoodstudy.ca/child-care-sept-2016/>.

What this means for the redevelopment of the Campanile Campus is that childcare services need to be included in the master plan of the site. There are already a large number of children in need of childcare; planning the adaptive reuse of the Campanile Campus as solely housing would just add to the pre-existing burden. Incorporating new childcare services into the program would help address the lack of childcare services and prevent the problem from worsening.

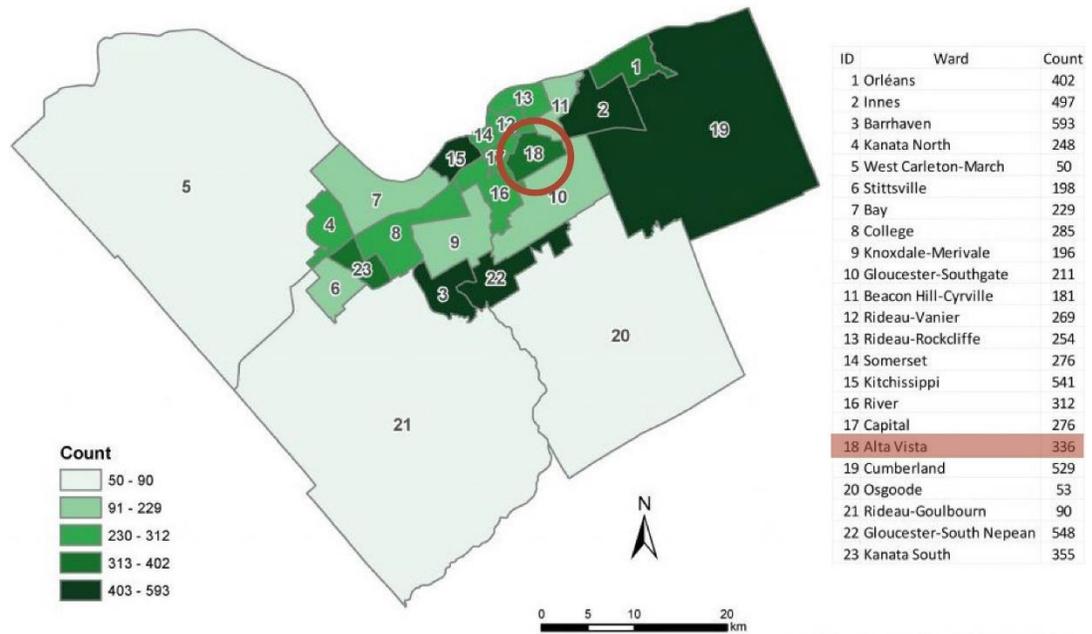


Figure 40: Children on the waitlist for a full fee space on CCRAW by city ward

*DESIGN GUIDELINES TAKEN FROM TOPIC*

- High rise buildings could be incorporated as part of the development and would fit in with the surrounding context.
- Rental housing should be provided as an option to cater to the increasing number of new immigrants to the country.
- A high number of new immigrants in the neighbourhood could need different resources such as language classes.
- A percentage of condominium and apartment units should be geared towards single-parent households as these housing options often provide more security and are more affordable.
- There is a large number of youths living in low-income households in the area and community amenities should be directed towards their benefit.
- Childcare services should be implemented as part of the program to help alleviate the demand in the neighbourhood.

## DESIGN

This section will synthesize research conducted for this thesis into an informed design for the adaptive reuse of the Campanile Campus.

### SCOPE OF DESIGN

This thesis is first and foremost a project on adaptive reuse, therefore the focus of the design is also adaptive reuse. In order to create a comprehensive design that looks at all aspects of the site, a master plan has been created detailing what will happen to the existing buildings and how the new buildings will be designed. This includes the creation an extensive program that shows the new proposed uses for the existing buildings as well as proposed uses for new infill buildings. It also gives general guidelines to the massing of new buildings in a way that compliments the heritage aspects

of the existing campus that emphasize modern heritage, or as described by the spirit of place and character defining elements.

The design then looks into how some of the existing pavilions could potentially be configured to their new uses. The design for the new buildings being proposed on the site will not go into the same level of detail as the existing pavilions because the thesis is focused around the concept of adaptive reuse. The chosen pavilions are C and J. Each pavilion represents a different original/new program requirement mix and acts as an example of how other buildings of a similar typology on the campus can be adapted to a new use. Architectural drawings for the chosen pavilions showcase the new design.

## DESIGN INTENTIONS

As stated in the thesis question, the aim of this thesis is to explore if the revitalization of a neglected building could help to solve social, urban, and sustainable issues in the city. Specifically, it will be looking at how the adaptive reuse of the Federal Study Centre can address the shortage of affordable housing in Ottawa.

CONCEPT: The design case study of this thesis will apply the concept of adaptable housing from CMHC to the adaptive reuse of the Federal Study Centre. This means providing a variety of housing types with different tenures which allows residents to choose their housing based on their changing needs and allows them to remain in the community they've fostered.

DESIGN PROBLEMS: From the research conducted and the site analysis there are several key issues that will be addressed in the design, they are as follows:

- Neglect and underuse of existing buildings.
- Insensitive alterations or adaptations of existing buildings which could cause eventual demolition.
- Stigmatization of heritage buildings and modern heritage.
- Lack of affordable housing in Ottawa, specifically affordable housing geared towards families.
- Lack of inclusive housing in current developments
- Lack of childcare services in the surrounding neighbourhood.
- Destruction of greenfield sites for new construction and continued urban sprawl.

ADDRESSING THE ISSUES: Below are the ways in which the design problems can be addressed. These ideas are organized into the categories of social, urban, sustainable, and heritage conservation aspects.

#### Social Aspects

- Providing affordable housing using various housing types to meet different housing needs.
- Providing affordable housing units geared towards families to address the RGI waitlist.
- Providing various housing types to limit the need for residents to uproot themselves from the community they've created.
- Inclusivity of housing for seniors, immigrants, families, and people of all religious backgrounds.

#### Urban Aspects

- Designing with density and target population growth in mind to enrich existing areas.
- Providing an infill option within the city to reduce urban sprawl.
- Providing an adaptive reuse option to reduce demolition and showcase that heritage can be used.

#### Sustainable Aspects

- Reuse of existing buildings to reduce the amount of embodied carbon and energy created by the building.
- Designing to improve the performance of the existing buildings in terms of energy and carbon consumption.
- Reuse of existing buildings and elements to reduce resource consumption.

## Heritage Conservation Aspects

- Providing guidelines for the sensitive and respectful adaptation of the campus through the creation of a master plan.
- Creating an appropriate program that works with the existing configuration of the heritage buildings as much as possible.
- Providing appropriate treatment to the existing heritage buildings in terms of restoration, rehabilitation, and preservation.

## PROGRAM

This section summarizes the design guidelines created from previous research and translates them into a comprehensive program for the site. The program can be broken down into 3 categories: housing, communal amenities for housing, and community spaces. A variety of housing options of different sizes, tenures, and prices are provided to allow people to have options based on their changing housing needs. Reinforcing the idea that the campus is a community hub also means providing intimate communal amenities for the residents who will be living there. Lastly, the program will provide community spaces that cater to the neighbourhood to allow the greater community to mix with the smaller one created on the campus.

## Housing Program

- Mixed income housing
  - Regular units
  - Higher-end units
  - Below-market units
  - Subsidised units
- Apartments
  - 1-bedroom units
  - 2-bedroom units
  - 3-bedroom units
- Condominiums
  - 1-bedroom units
  - 2-bedroom units
  - 3-bedroom units
- Senior care homes
  - Assisted living homes
  - Long-term care homes

## Community Spaces

- Concert hall
- Daycare services
- Event space
- Immigration centre
- Meditation space
- Office space
- Outdoor event space
- Park space
- Retail space

## Communal Housing Amenities

- Apartments and condominiums:
  - Bike racks
  - Storage space
  - Children's play space
  - Event room
  - Guest rental suite
  - Laundry room
  - Communal cooking space
  - Share-economy space
  - Community garden

- Fitness space
- Senior care homes:
  - Common room
  - Communal dining room
  - Communal cooking space
  - Fitness space
  - Recreational space
  - Laundry services
  - Transportation services
  - Meal services

### *DENSITY*

As a guideline for the redevelopment of the Campanile Campus, the City of Ottawa's rules on density were observed in order to get a better understanding of how many people would need to be accommodated on the site. The city has outlined specific areas where it would be beneficial to increase

density due to certain factors such as robust transit infrastructure or being close to an arterial main street with established commercial areas.<sup>133</sup> These designated areas have a target density, which is a target number for the amount of people per hectare that is dependant on the type of land use. From the map showing designated areas with a target density (figure 41), both Walkley Street and Bank Street are target density areas. While Heron Street is not a designated target area, the redevelopment of the Campanile Campus can become an opportunity to improve the area and make it a target street for the city. A hypothetical calculation for the density of the Campanile Campus was created using an average density index between Bank Street and Walkley Street, along with the density ratio designated for different housing types. The

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<sup>133</sup> City of Ottawa, "Density Index – Phase 1 Implementation of Official Plan Minimum Density Requirements for Designated Intensification Areas," Ottawa, October 2016, Accessed February 10, 2018,

[http://documents.ottawa.ca/sites/documents.ottawa.ca/files/density\\_index\\_en.pdf](http://documents.ottawa.ca/sites/documents.ottawa.ca/files/density_index_en.pdf), 2.

calculations are as follows and numbers are sourced from the City of Ottawa Density Index.<sup>134</sup>

Bank Street density index = 155

Walkely street density index = 170

Average density index = 160

Arterial main street density ratio for apartments = 1.62

Arterial main street density ratio for townhouses = 2.61

Density index = occupancy units x density ratio

Apartments:  $160/1.62 = 98$  units/hectare

Townhouses:  $160/2.61 = 61$  units/hectare

Site = 7 hectares

7 hectares = 700 apartment units

Or

5 hectares = 490 apartment units

2 hectares = 122 townhouses

The numbers calculated for the target density can be seen as an ideal situation where the site in question for development does not have any existing structures. In the case of the Campanile Campus, a 50% target density is being proposed. This would equal roughly 350 apartment units with a mix of townhouses. In exchange for meeting a lower density target for implementing other services such as affordable housing, community services, the preservation of built heritage, and the incorporation of public park space.

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<sup>134</sup> City of Ottawa, "Density Index," Ottawa, accessed February 10, 2018, <https://ottawa.ca/en/density-index#>.

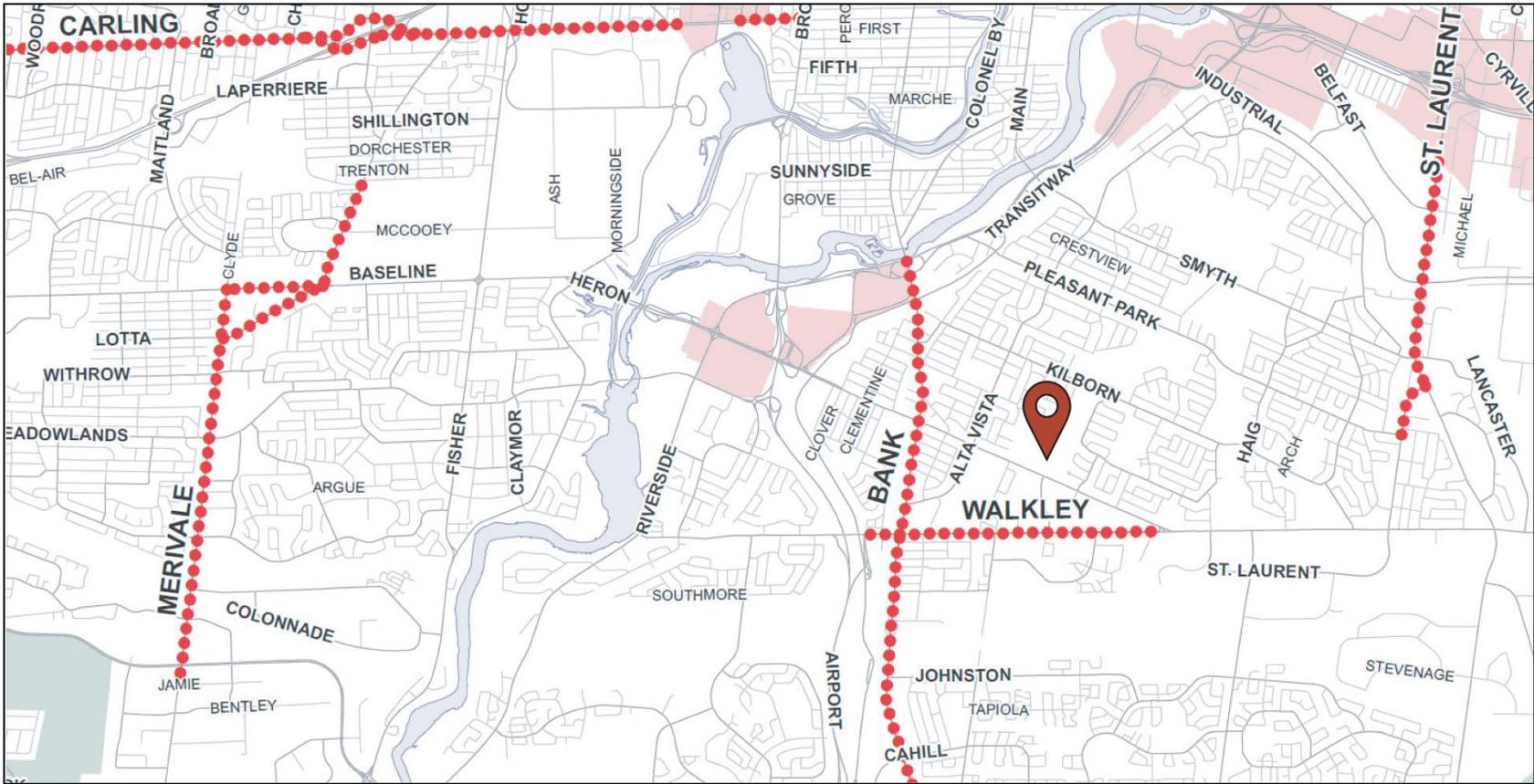


Figure 41: Map highlighting density target areas with the location of the Campanile Campus shown with a red location marker

*UNIT CONFIGURATION*

The existing buildings were analyzed to establish which pavilions were best suited to be converted to housing. The selected pavilions were then analyzed to see what unit configuration worked in each space. The following table illustrates the breakdown of the number of units by type in each pavilion designated for housing.

<b>Pavilion</b>	<b>Previous Use</b>	<b>Usable Area</b>	<b>Number of Units</b>	<b>Unit Types</b>
<b>C</b>	Nun's Residence	Floors 2-6 1F at 311.4m <sup>2</sup> X6F = 1868.4m <sup>2</sup>	5 units per floor = Total 25 units	Senior's care units -20X 1Bed with shared bath at 20m <sup>2</sup> -5X 1Bed with bath at 20m <sup>2</sup>
<b>G</b>	St. Patrick's Elementary School	Floors 2-3 1F at 940.2m <sup>2</sup> X3F = 1530m <sup>2</sup>	8 units per floor = Total 16 units	-4X 3BR units at 140m <sup>2</sup> -6X 2BR units at 100m <sup>2</sup> -6X 1BR units at 70m <sup>2</sup>
<b>J</b>	Classroom	Floors 2-3 1F at 806.8m <sup>2</sup> X3F = 2420.4m <sup>2</sup>	5 units per floor = Total 10 units	-2X 3BR units at 140m <sup>2</sup> -4X 2BR units at 100m <sup>2</sup> -2X 1BR units at 70m <sup>2</sup> -2X Bachelor units at 60m <sup>2</sup>
<b>K</b>	Nun's Residence	Floors 2-6 1F at 311.4m <sup>2</sup> X6F = 1868.4m <sup>2</sup>	5 units per floor = Total 25 units	Senior's care units -20X 1Bed with shared bath at 20m <sup>2</sup> -5X 1Bed with bath at 20m <sup>2</sup>
<b>Total</b>			76 units	

Table 2: Housing unit breakdown for existing buildings

## MASTER PLAN

The following maps and description shows the overall planning and analysis for the reuse of the campus in the form of an adaptive reuse strategy and a new development strategy which articulates the new program, massing, building heights, and circulation. When designing the redevelopment of the site and the creation of new buildings, guidelines were established based on the character defining elements of the site and the massing of the existing buildings.

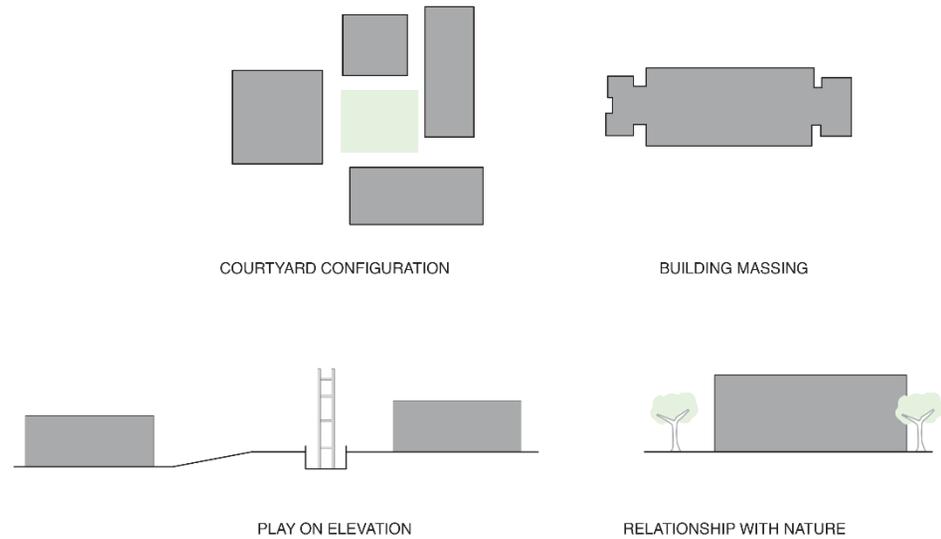


Figure 42: Character defining elements that influence the master plan

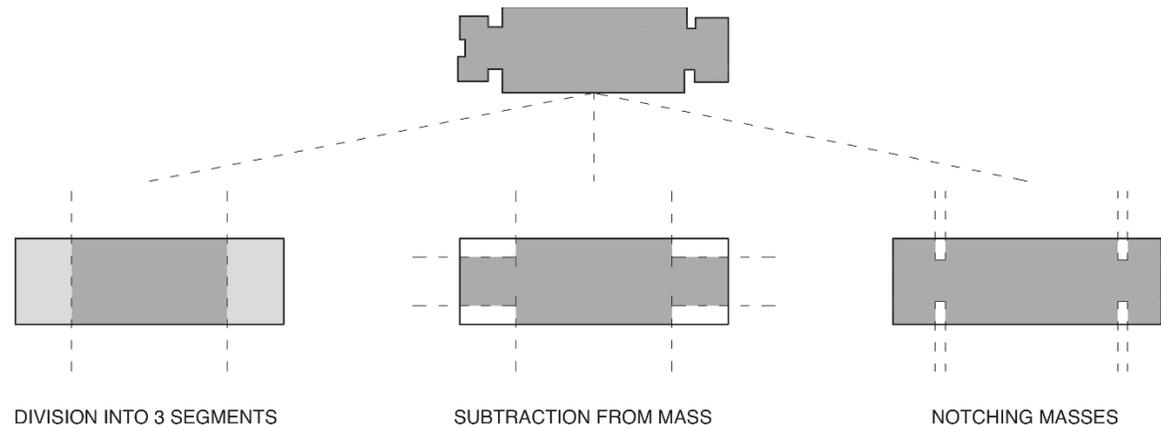


Figure 43: Building massing rules for proposed new development

### *ADAPTIVE REUSE STRATEGY*

With an established program, each existing building was analyzed to see which programmatic elements best fit within the existing structures. A best fit was categorized as needing minimal changes made to a building in order for it to adapt to a new program. This keeps in line with the concept of “long-life/loose-fit” as the buildings will not be extremely altered for a specific program, thus allowing for further program changes in the future.

Overall, the conservation treatment for the site consists of a high level of preservation. Almost all of the pavilions will be retained and maintained except for Pavilion M, which is not a federally designated heritage building. Pavilion M is a large one storey building which does not hold any heritage value for the site and is not space efficient. Its demolition will instead provide space for higher density housing on the site in the form of condominiums. The remaining pavilions will be rehabilitated

and adapted to a new use. Pavilion's A and F will be the only two pavilions to be reinstated and restored to their original form. During the time the federal government owned the site, Pavilion A was clearly modified so that it did not resemble a religious space. A second story balcony structure was added into the chapel which housed space for extra seating and lounging activities such as billiards. The large structure currently affects the lighting quality for the rest of the chapel and creates a very dark space underneath it. It also disrupts the balance between the space, the skylight above, and the original hanging metal sculpture. This balcony addition will be removed as part of the process of turning the chapel into a meditation space. Pavilion F, which was once an auditorium, can be preserved as minimal changes will need to be made to update the space to accommodate a community theatre.

The following paragraphs give an overall description on the decisions made when assigning a new program to each pavilion. Each pavilion was looked at in terms of its original function, size, and interior configuration as criteria for their adaptive reuse.

Pavilion A was originally a cafeteria on the ground floor and a chapel on the second floor. The large open ground floor lends itself to being used as an event space, while the quiet and contemplative nature of the chapel is converted into a meditation space. A meditation space provides a more inclusive space to people of all nationalities and religions, this allows the uniqueness of the chapel to be appreciated by everyone.

Pavilions B and L adjacent to the chapel were once student classrooms. The interior configuration of several large

rooms can easily be adapted to house daycare services which needs a similar layout.

Pavilions C and K were the residents for the nuns and later offices for government employees. The central location of the circulation made it difficult to convert to a typical housing unit. Instead Pavilions C and K are adapted for senior's long-term care housing as the existing small rooms are ideal for individual bedroom units. This is further explained in the section on Pavilion design.

Pavilion D will remain an open gymnasium for residents and local children to use. At the beginning of the design process, it had been considered to demolish the pavilion to allow for more housing. The planned increase in housing on the site also calls for amenities to be close by, and an on-site

gymnasium allows for kids and other residents to have indoor activity space during the winter.

Pavilion E was originally the girl's dormitory and later office space. The central circulation made it difficult to adapt to housing similarly to Pavilion C and K. As an alternative it will act as office space on the second and third floors. On the ground floor it will be the lobby for Pavilion F. Pavilion F was once an auditorium and does not have its own exterior access. It can be converted into a community theatre space with minimal alterations and Pavilion E acting as the entrance.

Pavilion G is currently owned by the Catholic School Board. Local news articles have reported that the Catholic School Board is looking to combine St. Patrick's Secondary School, located in Pavilion G and the adjacent buildings to the

west of the campus, with another school down the road.<sup>135</sup> The article likewise points out that the mechanical and electrical systems of the pavilion are intertwined with the rest of the Federal Study Centre.<sup>136</sup> This makes it difficult for the pavilion to be sold on its own. As part of this thesis, it is being assumed that Pavilion G will once again become part of the Federal Study Centre and sold with it.

It is also assumed that this pavilion has a similar interior configuration as Pavilion J. Both of these pavilions will be converted into apartments as their interior circulation is kept to the perimeter, allowing the majority of the floor space to be uninterrupted. This creates optimal conditions for the creation of apartment units and is further explained in the section on pavilion design. Since both of these pavilions are also centrally

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<sup>135</sup> Erin McCracken, "PART TWO: Federal Study Centre's Sale Spurs School Move," Ottawa Community News, April 20, 2016, accessed March

05, 2018, <https://www.ottawacommunitynews.com/news-story/6506832-part-two-federal-study-centre-s-sale-spurs-school-move/>.

<sup>136</sup> Ibid.

located close to other communal amenities, the ground floors will become retail and commercial service spaces.

Finally, Pavilion H and I were once the administration building and library for the campus. These buildings are smaller and interconnected. Due to their size, both pavilions could be used as small-scale office space. Initially, both pavilions are converted into an immigration centre to address the higher number of immigrants living in the neighbourhood. They can be converted later into flexible office or retail space if an immigration centre is no longer needed.

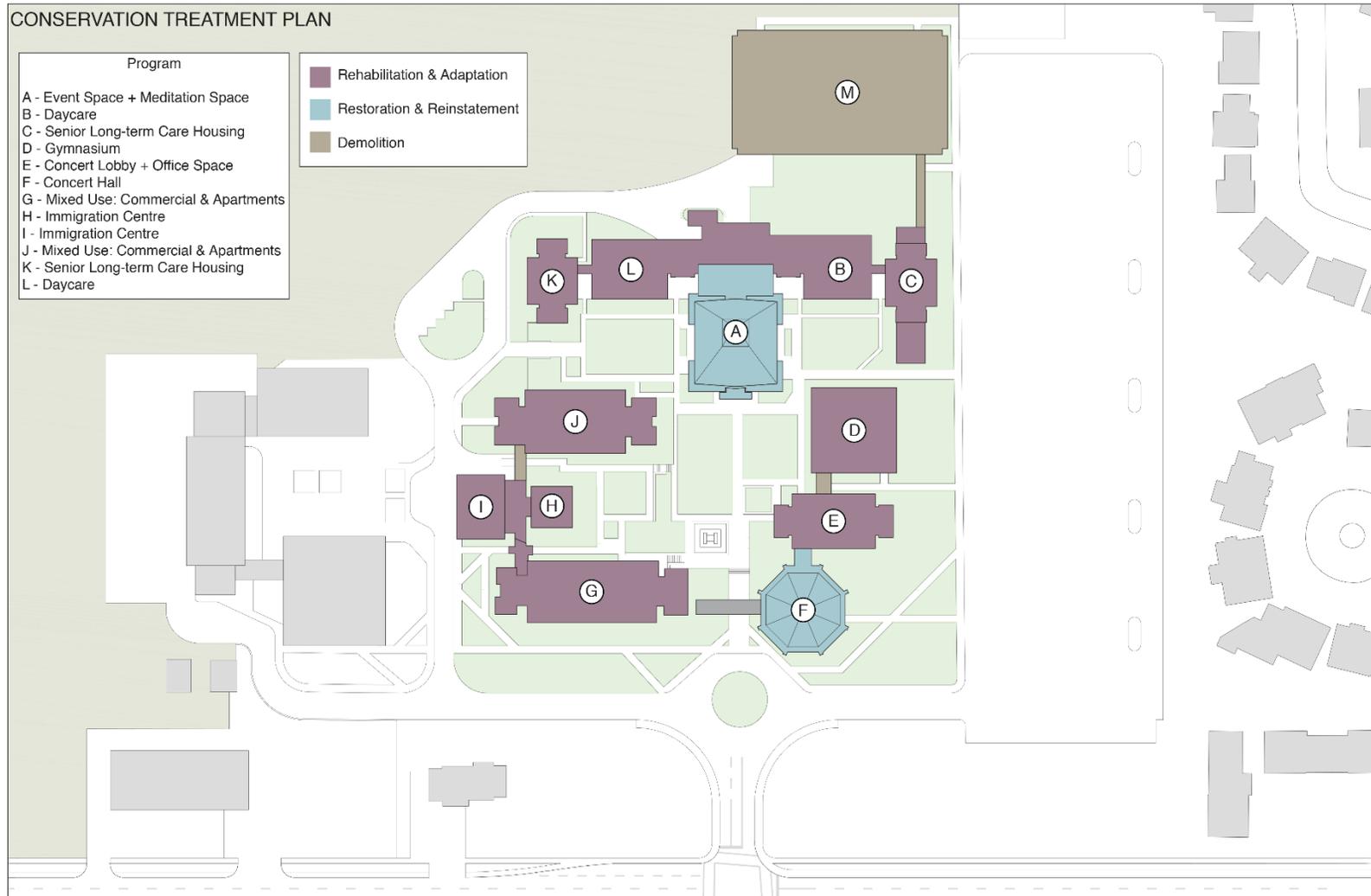


Figure 44: Conservation Treatment Plan

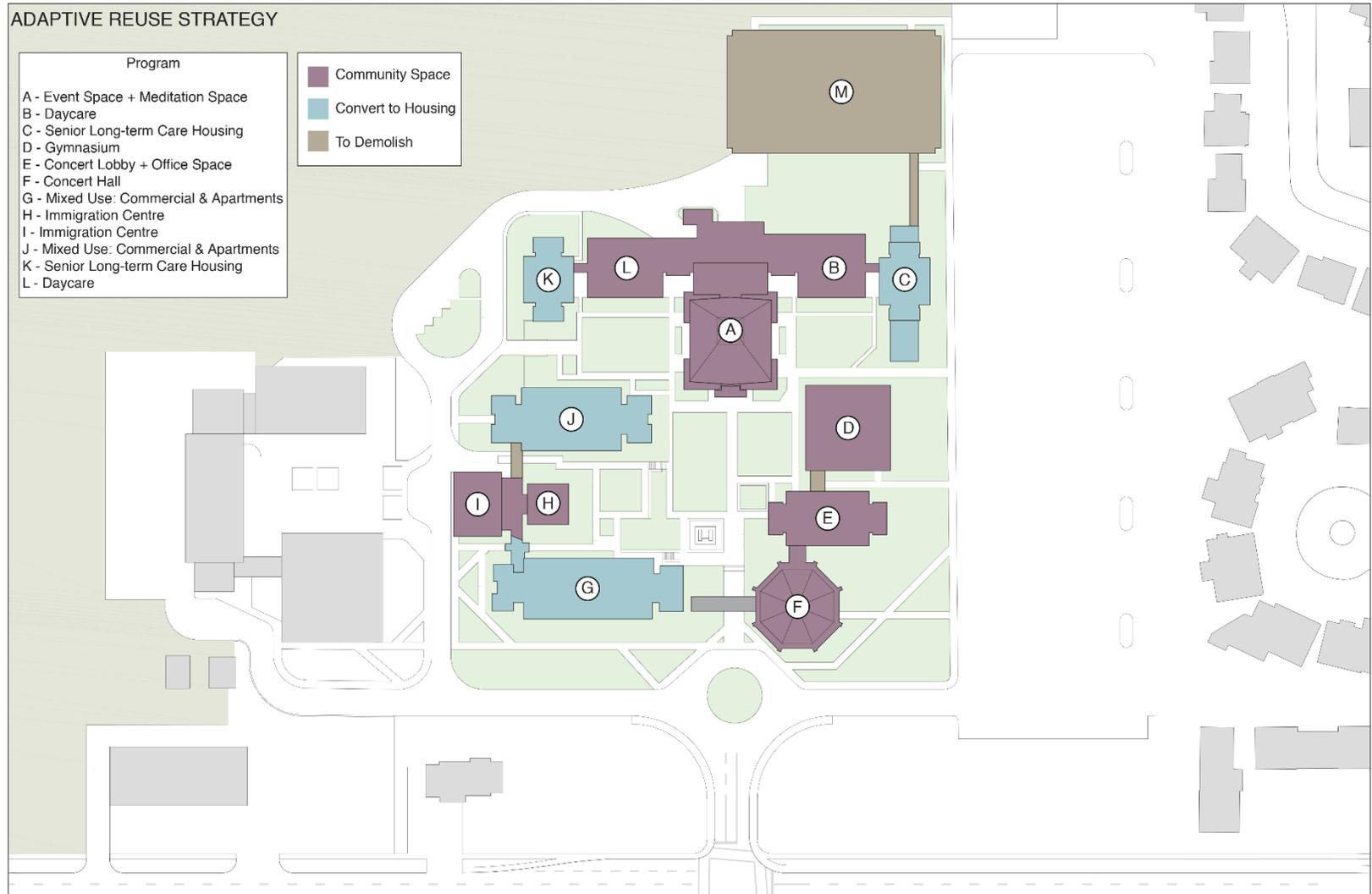


Figure 45: Adaptive Reuse Strategy

### *NEW DEVELOPMENT STRATEGY*

The new configuration for the campus retains almost all of the existing buildings. New structures are only created on previously unused land from the large parking lot, or in the space provided by the demolition of Pavilion M. The walkway which was once the perimeter boundary between the site and parking lot is widened and turned into a pedestrian promenade that links the old and the new.

The new buildings are arranged in a similar manner to the existing pavilions with sets of buildings grouped around outdoor courtyards. The courtyards on the eastern side of the site provide a buffer zone between the campus and the existing neighbourhood, while the courtyards at the north of the site act as an interstitial space between the outdoor spaces on the campus and the large designated park space beyond. Currently the designated park space is left overgrown, but with

the redevelopment of the Federal Study Centre, it could also be redeveloped as usable park space for the neighbourhood. Outdoor elements such as walking trails, gardens, dog parks, children's play spaces, and water elements could be added to the greenspace in the future.

The majority of the public zone is kept towards the centre of the campus where many of the existing buildings have been converted to community spaces. The perimeter of the site towards the east and the north are kept as a private zone as most of the new residential buildings are located along the edges. The programming for the new buildings consists of three main typologies: low-rise apartment and townhouse courtyards, high-rise condominiums, and convertible parking garages. These typologies will be further explained in the section on New Building Design.

The new buildings are sympathetic towards the heights of the existing buildings so as to keep the campus' cohesiveness. This in turn allows Pavilion A to remain the central focus point of the campus as was originally intended. The low-rise apartment buildings are 3 and 4 storeys high which matches the height of most of the existing pavilions. The townhouses are two storeys high so that they are equivalent in height to the neighbouring single-detached homes. The high-rise condominiums are a maximum of eight storeys high and are only slightly taller than Pavilions C and K which are 6 storeys tall.

Keeping in line with the original circulation plan, all vehicular traffic is also kept towards the perimeter of the site to allow for the centre of the campus to be pedestrian oriented. Visitors will be able to park in the new parking structures and underground parking will be provided for the residents as part

of the construction of the new buildings. Vehicle access to the underground parking is located in-between the apartment buildings while pedestrian access is provided through a small structure located within the apartment-townhouse courtyards. Pedestrian pathways are provided between buildings and courtyards.

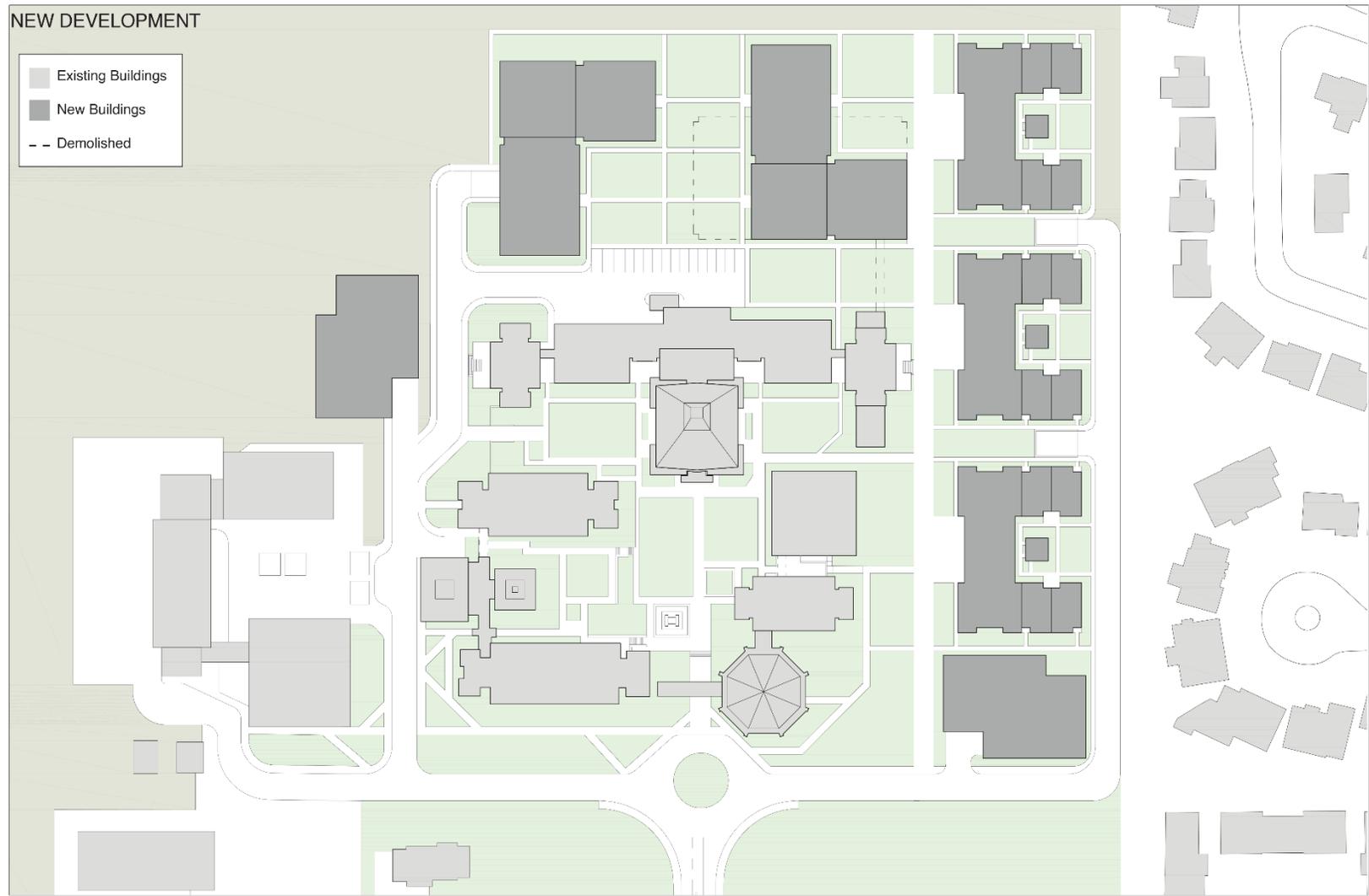


Figure 46: Proposed new infill buildings on the site

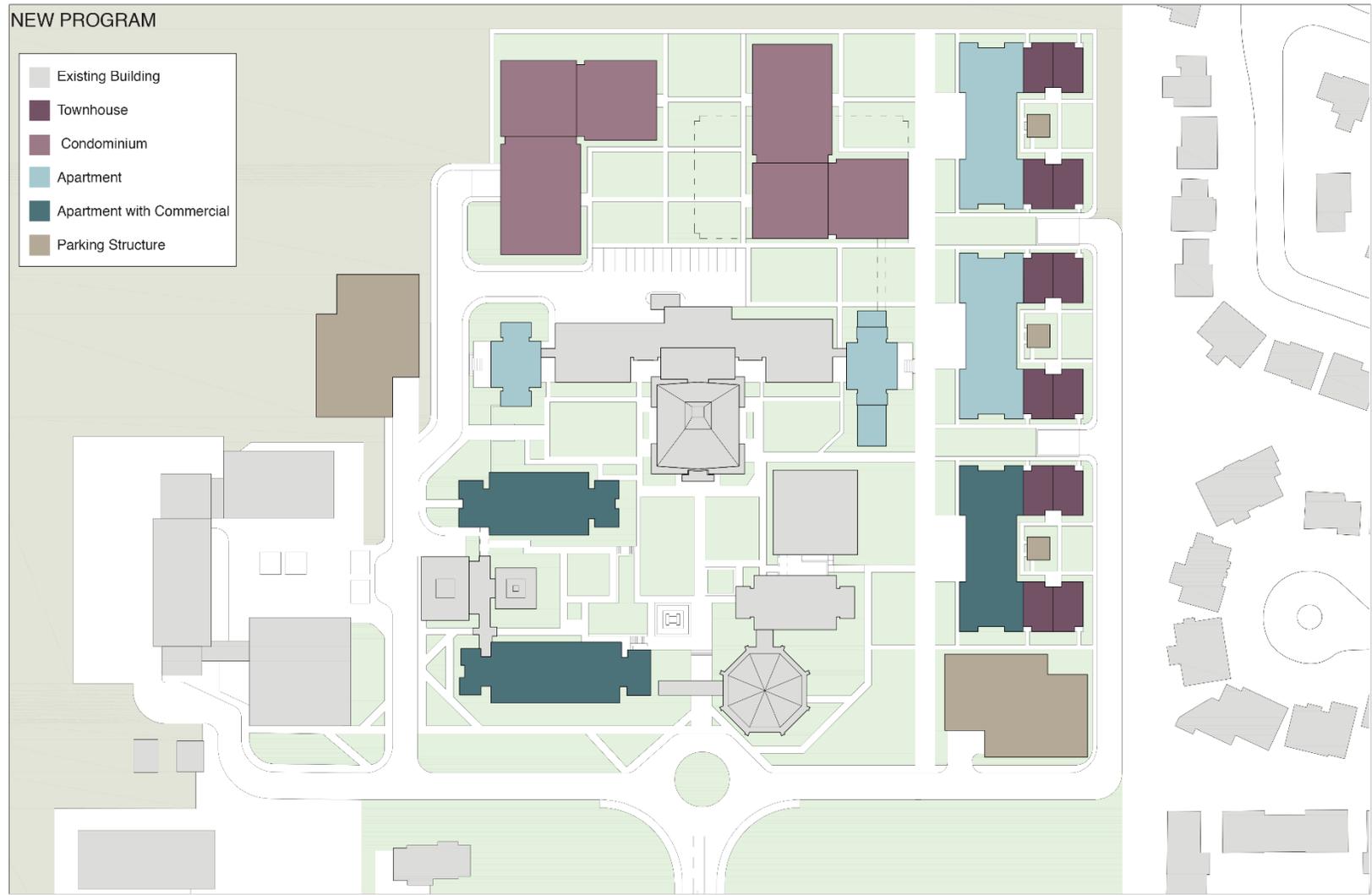


Figure 47: New program layout for infill buildings and housing

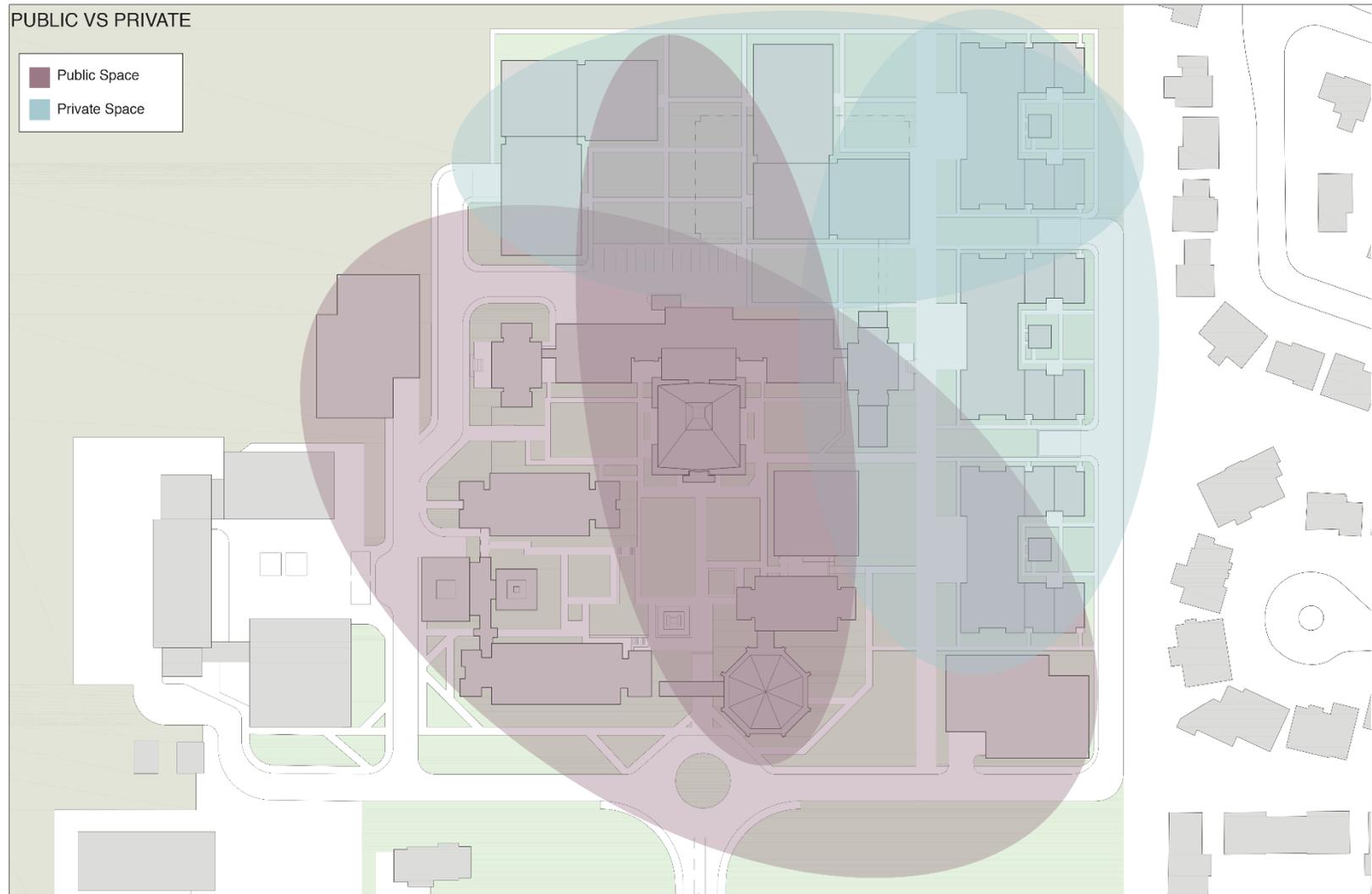


Figure 48: Public vs private zoning of the campus

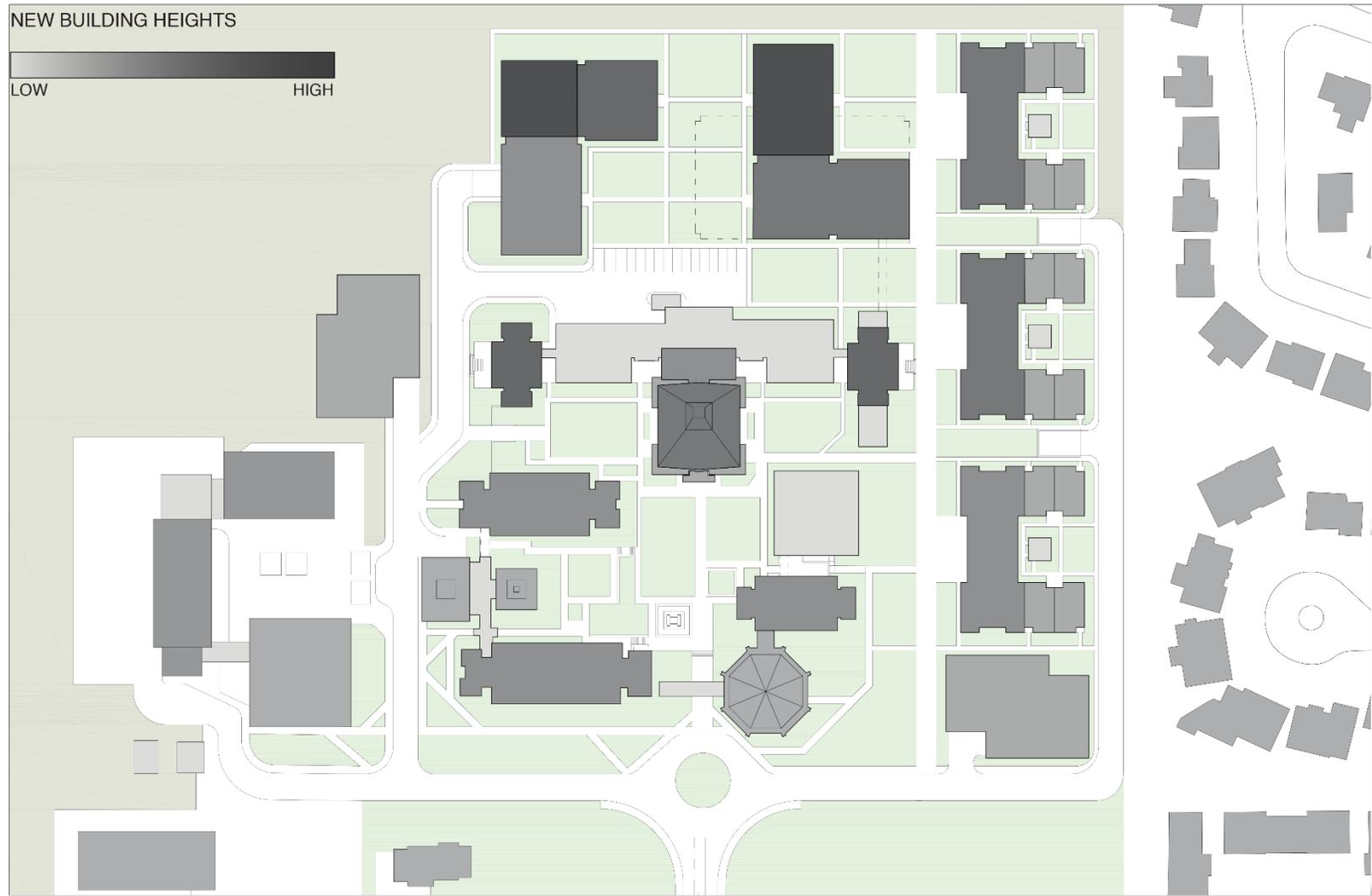


Figure 49: Building heights including new infill buildings

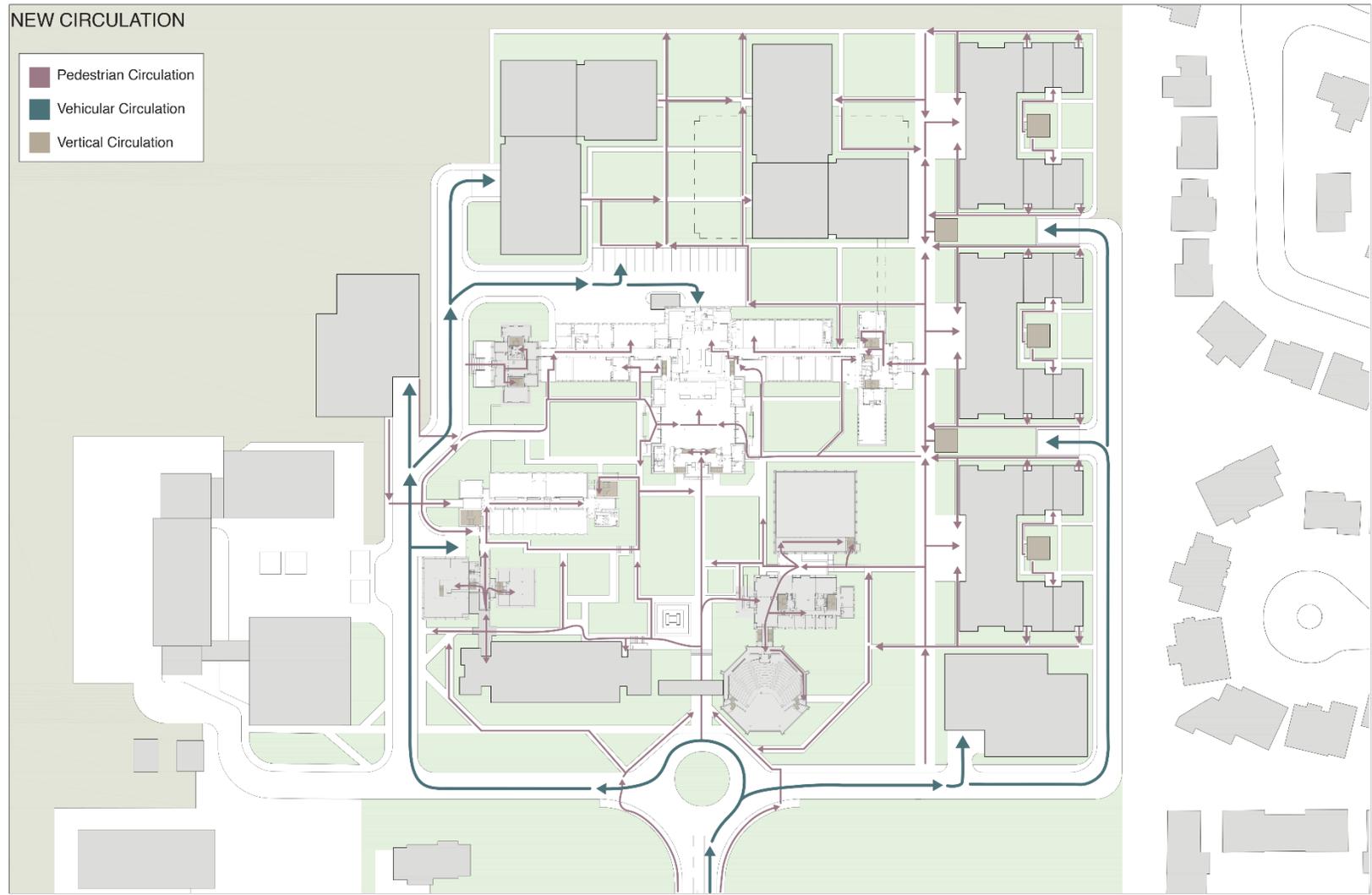


Figure 50: New site circulation

## NEW BUILDING DESIGN

When designing the new buildings which would be added to the campus, a few design cues were taken from the character defining elements and massing rules observed in the existing buildings as previously stated. The design of each building plays off of the proportions of the existing buildings, the material palette of light and dark brick in combination with concrete, and the tall narrow windows found throughout the site.

There are three building typologies which will be added to the site. The first typology is the low-density apartment and townhouse courtyard. This building combination provides housing that is oriented towards families, with the apartment consisting of mostly two and three-bedroom units. The townhouses also have a three-bedroom capacity. The shared courtyard between the townhouses and apartment building

offers a semi-private outdoor space for residents to gather in. Placing this housing combination on the eastern side of the site helps to create a buffer zone between the adjacent neighbourhood and the Federal Study Centre. The townhouses provide a height buffer so that the neighbouring single-detached houses are not overshadowed by a larger structure. The long apartment buildings in turn provide a noise buffer between the existing residential neighbourhood and the public activities that will be taking place on the campus. Since the new apartment buildings front the pedestrian promenade and are located closely to other communal amenities on the site, one of them will have a commercial ground floor.

The second building typology is the high-density condominium which is found at the north end of the campus. This building type provides housing for both families and one or two-person households in the form of bachelor, one, two,

and three-bedroom units. The two condominium towers are situated behind the building combination of Pavilions A, B, C, L, and K. The new towers are stepped to provide a better height transition between the higher towers and the lower existing pavilions such as B and L. Both towers are eight stories at their highest points. This height was established from the existing high-rise towers across the street, and the six-storey towers already on the campus. These towers are similar in footprint but unsymmetrical to each other so as not to take away from the symmetry created between Pavilions A, B, C, L, and K.

The third building typology is a convertible parking structure. There are two new parking structures, one located close to the entrance of the campus, and the other located adjacent to Pavilion K. Both of these structures are strategically placed to provide parking for visitors to the site. The parking

structure near the entrance services Pavilions C, D, E, F, and G, along with the new apartment buildings that have commercial ground floors. All of these buildings will have frequent visitors from outside the campus. The second parking structure services Pavilions A, B, H, I, J, L, and K, along with any visitors heading to the condominiums or park space. When less parking is needed on the site, these parking structures can be converted into housing or commercial space. By keeping the levels of the parking garage level and locating the ramps at the perimeter of the building, the structure will be easier to convert in the future. If the ramps are removed, the space left creates a large vertical shaft where other circulation can be inserted. Each floor can then be fully closed off by extending the walls to the ceiling and inserting windows.



Figure 51: South elevation of the apartment and townhouse complex



Figure 52: Remaining elevations of the apartment and townhouse complex



Figure 53: East Elevation of Condominium 1

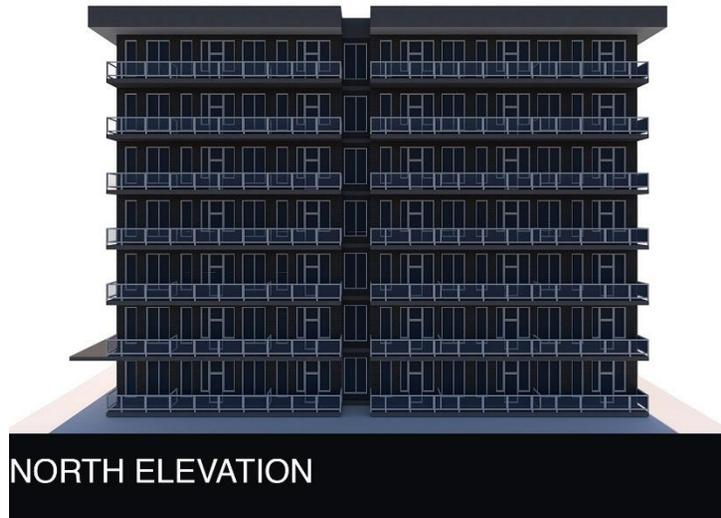


Figure 54: Remaining elevations for condominium 1



Figure 55: East elevation of condominium 2

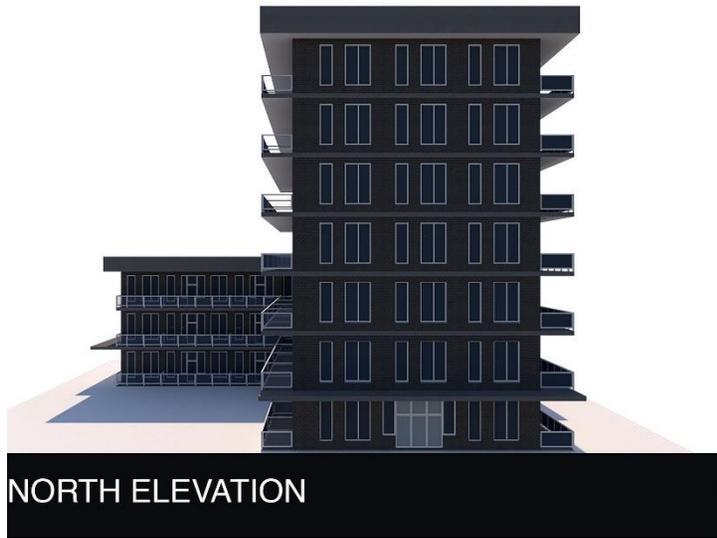


Figure 56: Remaining elevations of condominium 2

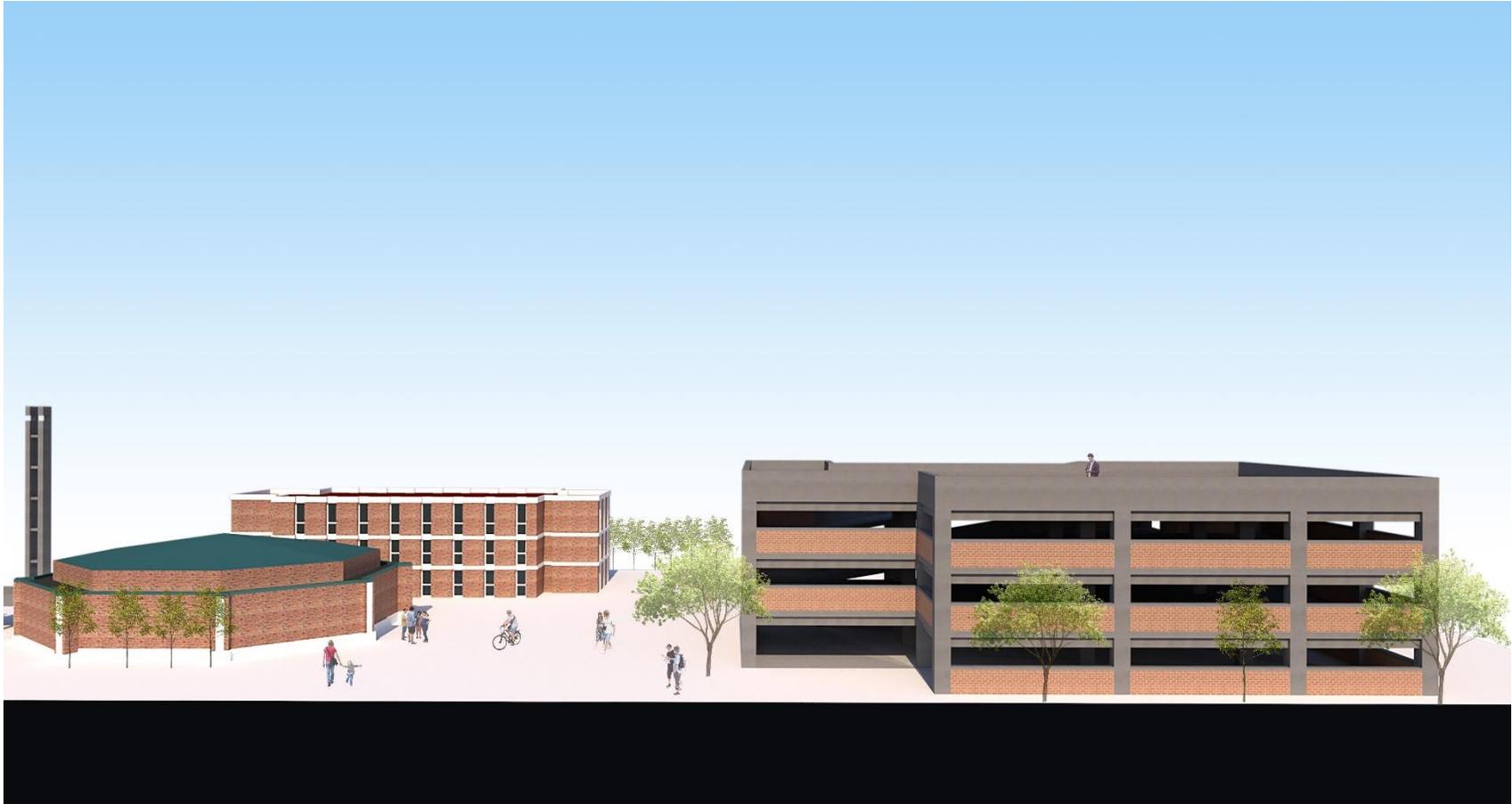


Figure 57: South elevation of parking complex

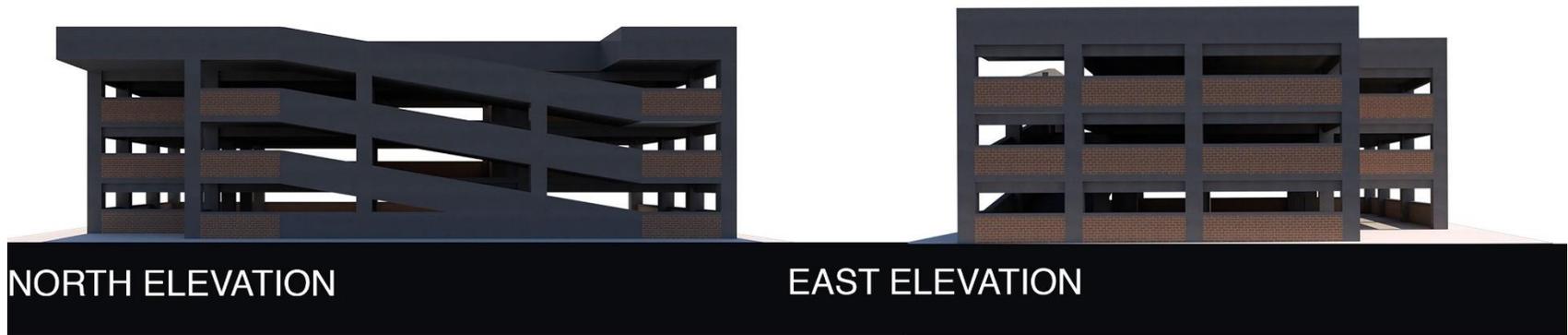


Figure 58: Remaining elevations of the parking garage

## PAVILION DESIGN

The following figures and description give a detailed example of how existing pavilions can be reconfigured towards an appropriate new use.

The first example is Pavilion J. Originally used as a classroom, the interior layout was configured in a way that allowed for the easy conversion to housing and commercial uses. The vertical circulation located at the perimeter of the building and the double-loaded corridor arrangement created the maximum usable area at the centre of the building without any large disruptions.

The ground floor has been converted to commercial services as the location of Pavilion J is within the public zone. It is close to the campus entrance and the other pavilions which have been designated for communal uses. These commercial services would benefit from the surrounding stable housing

population and the transitory visitors to the communal amenities. Services such as a bakery, hair salon, and clothing alterations cater to the needs of residents while smaller spaces for retail would benefit from visitors to the site. These smaller retail services can also provide job opportunities for people living in the building above or elsewhere on the campus.

The second and third floor of Pavilion J have been converted to apartments. The core of the building consists of a mix of one-bedroom, two-bedroom, and three-bedroom apartments with a focus on two and three-bedroom apartments which are better suited for families. The smaller area adjacent to the staircases have been converted into a bachelor apartment on one side and a communal space for the apartment on the other. This communal space allows for residents to interact with each other in many ways. It can act as a share space where residents are able to leave things they

no longer use and feel another resident might benefit from. It allows for a small gathering space for residents and their guests. It also acts as a designated area where children in the building could potentially play together without parents having to worry about their safety.

The adaptation of Pavilion J can in turn be applied to Pavilion G which is assumed to have a similar interior layout as it was also originally used as a school.

PAVILION J  
1ST FLOOR ORIGINAL

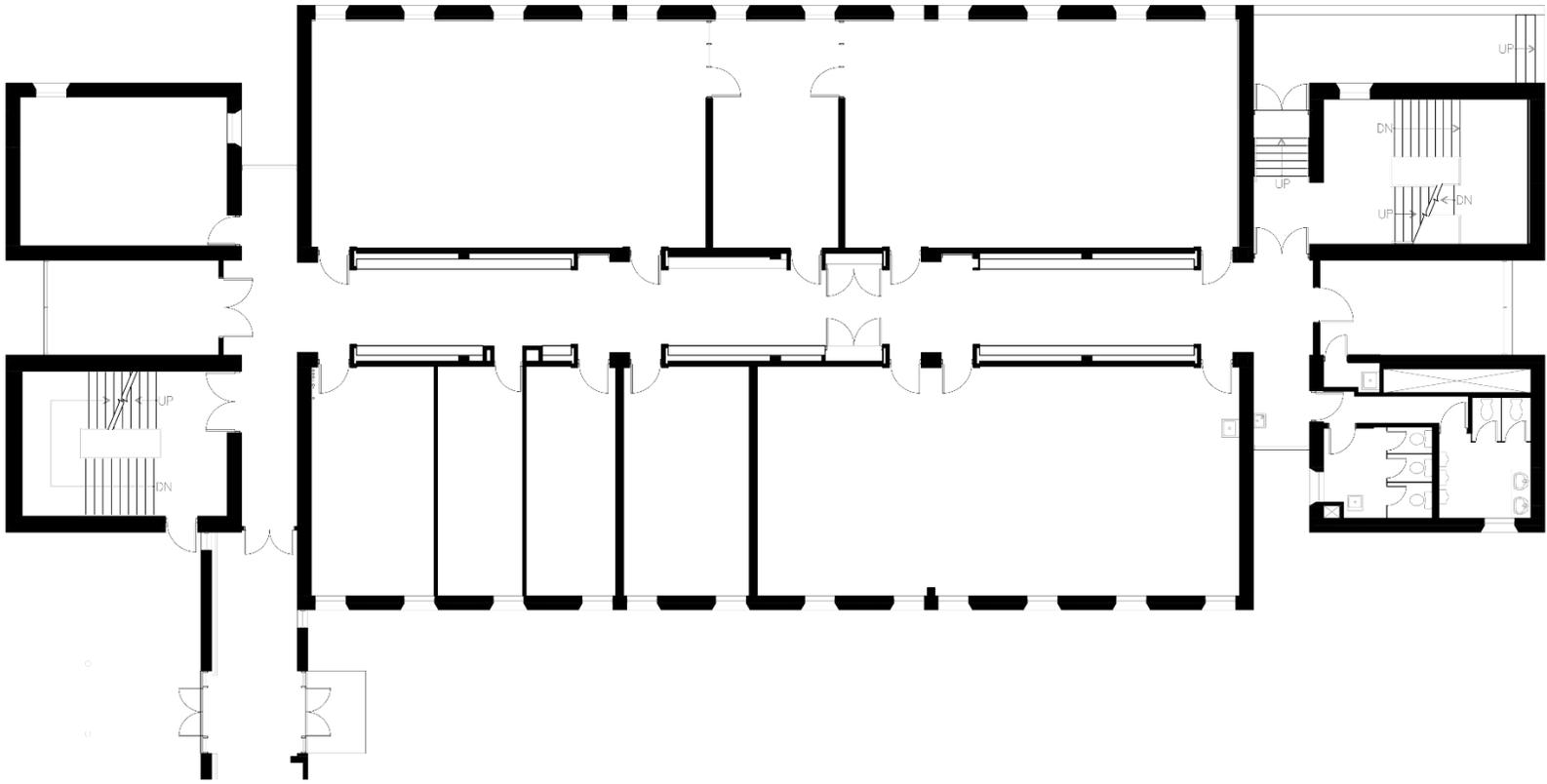
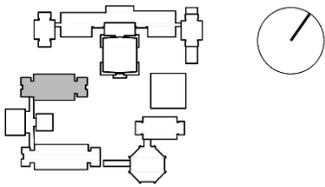


Figure 59: Existing 1<sup>st</sup> floor of Pavilion J

PAVILION J  
1ST FLOOR

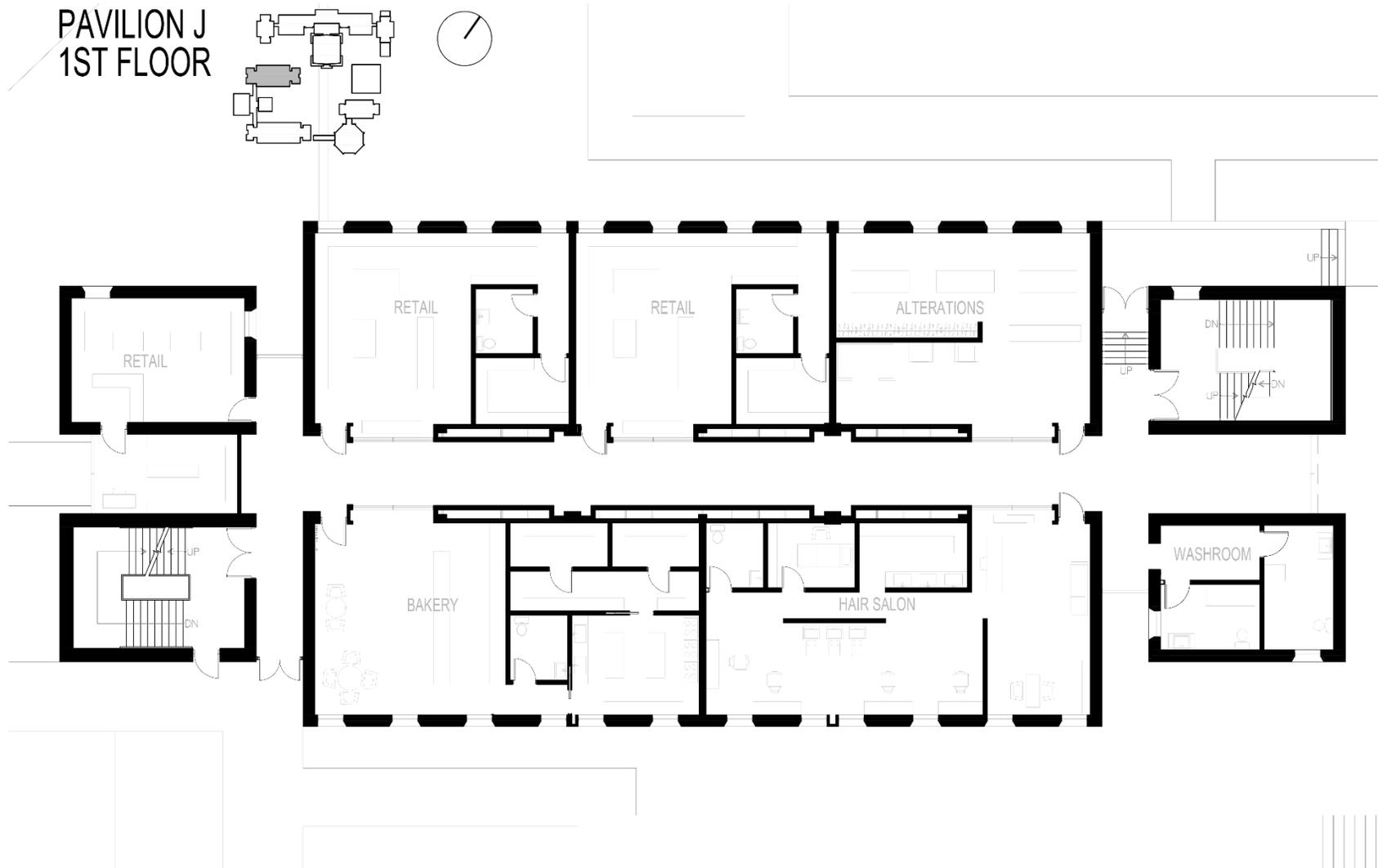


Figure 60: Reconfigured 1<sup>st</sup> floor of Pavilion J to commercial services

PAVILION J  
2ND FLOOR ORIGINAL

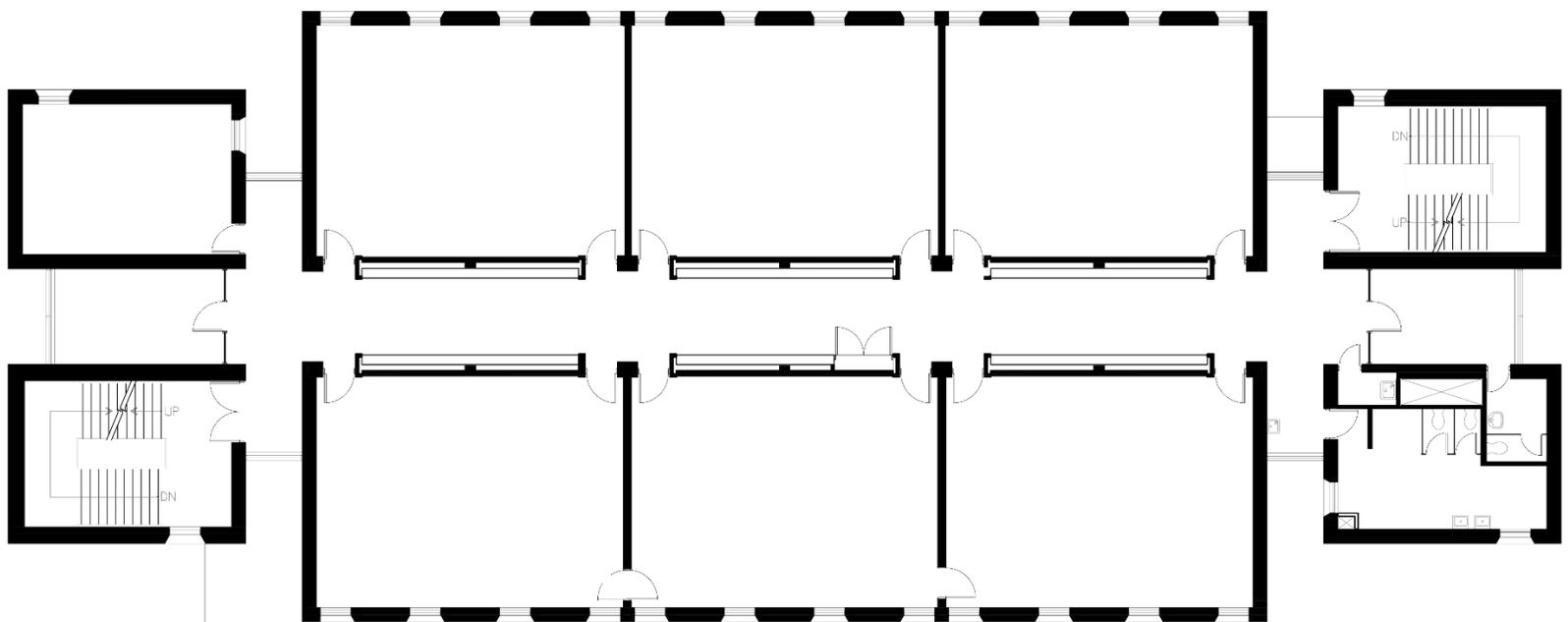
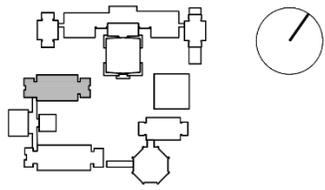


Figure 61: Original 2<sup>nd</sup> floor of Pavilion J

PAVILION J  
2ND - 3RD FLOOR

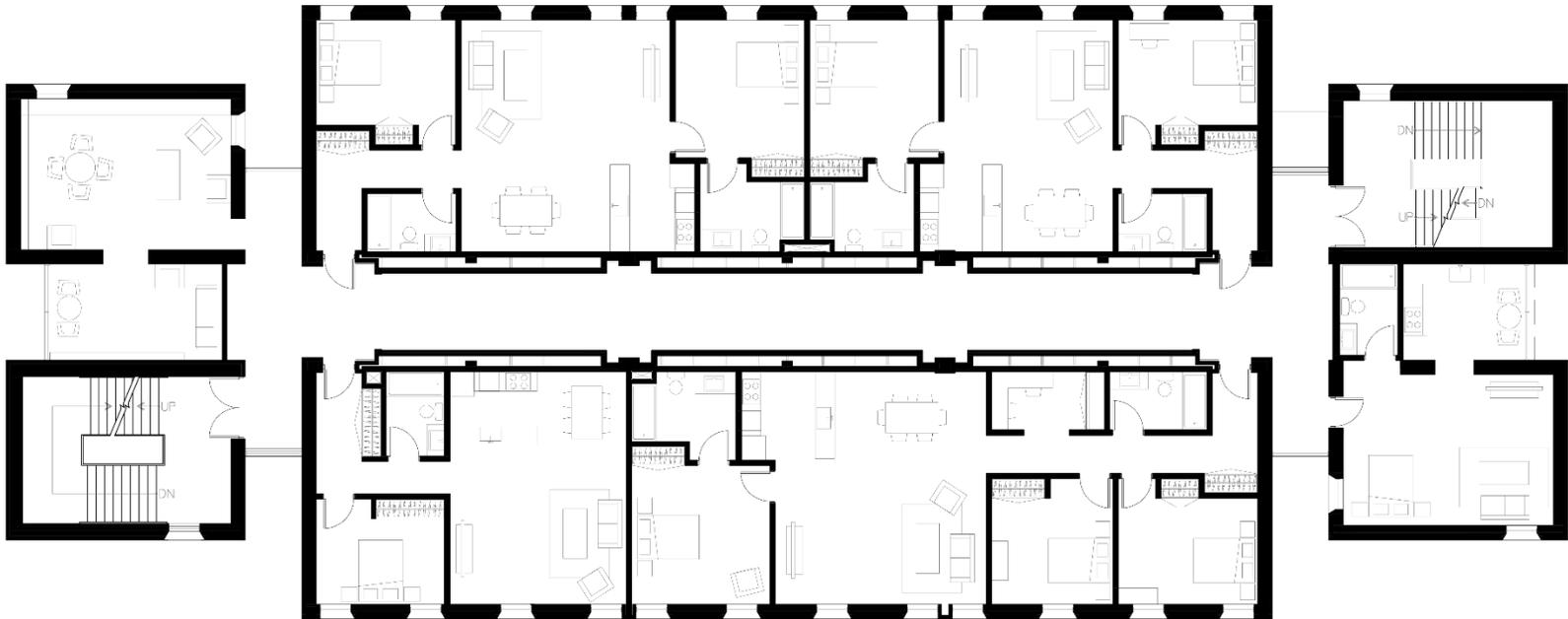
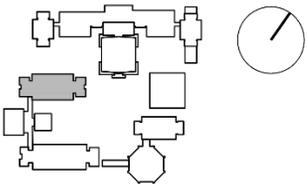


Figure 62: 2<sup>nd</sup> and 3<sup>rd</sup> floor configuration of Pavilion J to apartment units with communal space

The next example is Pavilion C. Originally the tower was used as the residence for the nuns who ran the Campanile Campus and then as offices for the federal government. The tower has a small floor plate with centrally located vertical circulation. Due to the location of the staircases and the elevator, the conversion of this pavilion to apartments was not a viable option. There was little room available to divide the floors into several apartments that would also be able to access both staircases. The option to convert each floor into a single housing unit was also explored, but the location of the vertical circulation still made for an awkward arrangement of the interior.

Instead, the small floor plates and existing smaller rooms led to the idea of adapting Pavilion C into a senior's long-term care residence. There are several levels of care that a senior's residence can provide. In this case, Pavilion C would

be converted into a senior's home where residents need full time care and support from the nursing staff. A central nursing station is placed where the public washrooms used to be located. Each of the offices can then be converted into two individual resident rooms sharing a bathroom. The southern quadrant of the building is larger than the northern quadrant and has a staircase directly entering the area. This leads to the decision to make it a common room for the residents where they can socialize with one another and eat meals together. The northern quadrant of the building is significantly smaller than the south and does not have a staircase entering the area so it can instead be converted into a resident room with a private bathroom.

The larger podium on the ground floor likely originally held meeting rooms and offices. The large room at the south of the building is easily converted into a common area for

residents and guests to spend time together. The rooms at the north end of the ground floor are then used as an office space for the staff, and a large kitchen that will provide food services for all of the residents.

As the pavilion will be retrofitted for housing, it is important to take accessibility into account. When looking at the existing vertical circulation it became evident that even with an upgrade, the elevator would not be able to fit a medical stretcher in the case of an emergency. Instead of just attaching a new elevator to the exterior of the building, the new elevator is added as part of a sun room for guests. From the exterior, the addition uses a similar material palette drawing from the burnt bricks found in the existing pavilions. The solid colouring of dark brick contrasts with Pavilion C while the window sizes and concrete spandrel panels harmonize with the existing form.

The adaptation of Pavilion C can also be applied to Pavilion K which is almost identical to Pavilion C in form and interior configuration.

PAVILION C  
1ST FLOOR ORIGINAL

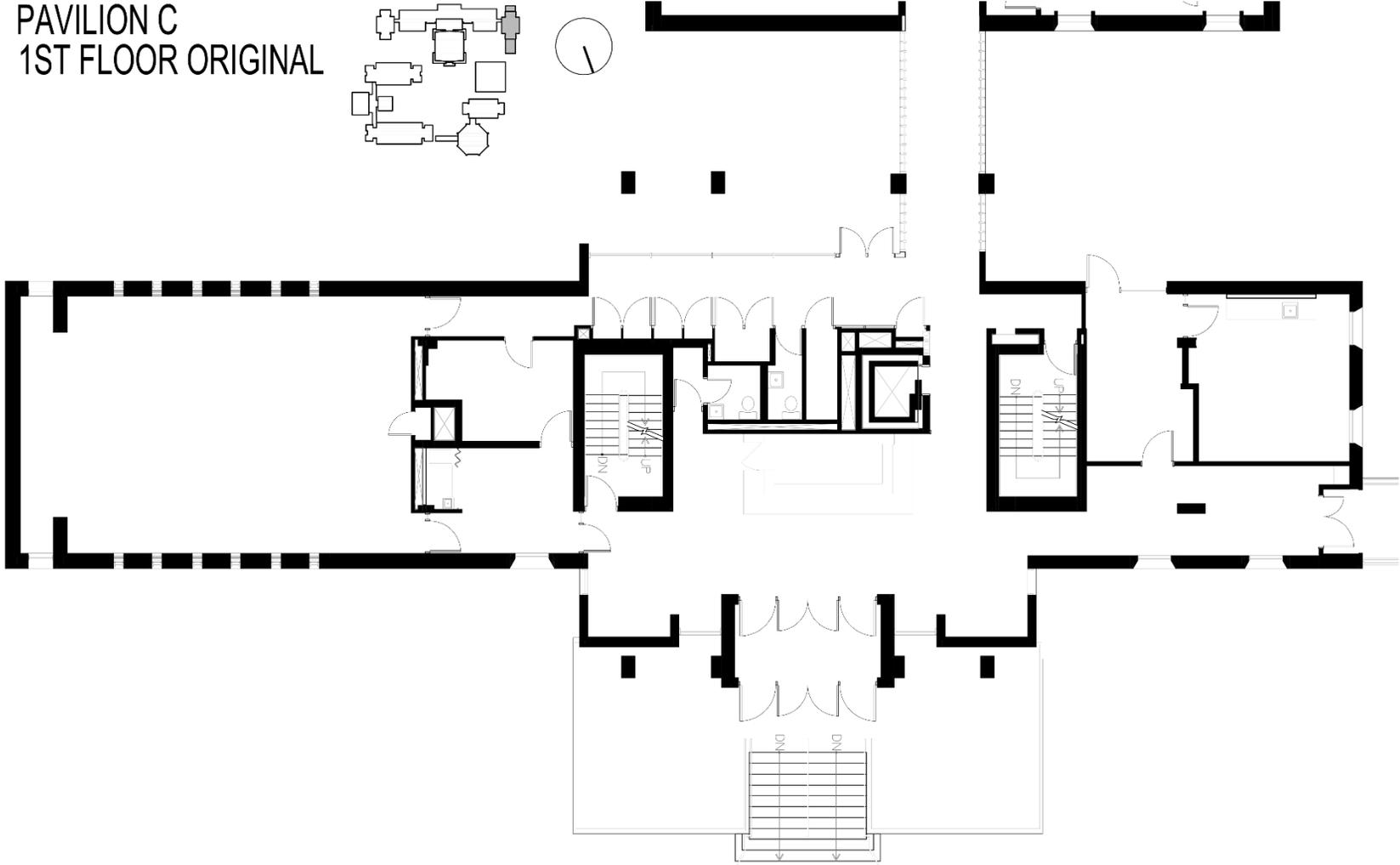


Figure 63: Pavilion C Original Ground Floor

PAVILION C  
1ST FLOOR

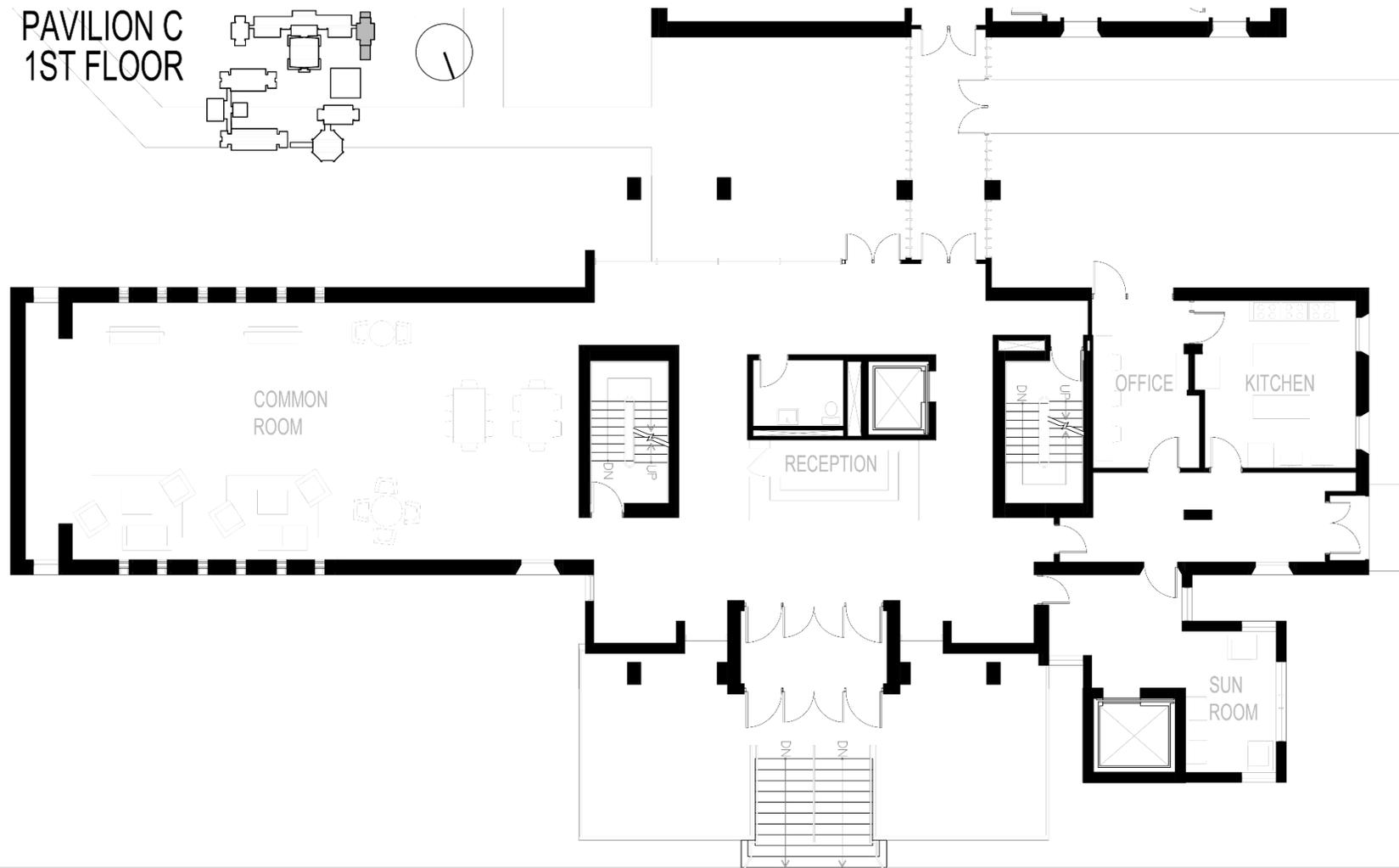


Figure 64: Pavilion C Ground Floor reconfigured for a Senior's Long-term Care Home

PAVILION C  
2ND FLOOR ORIGINAL

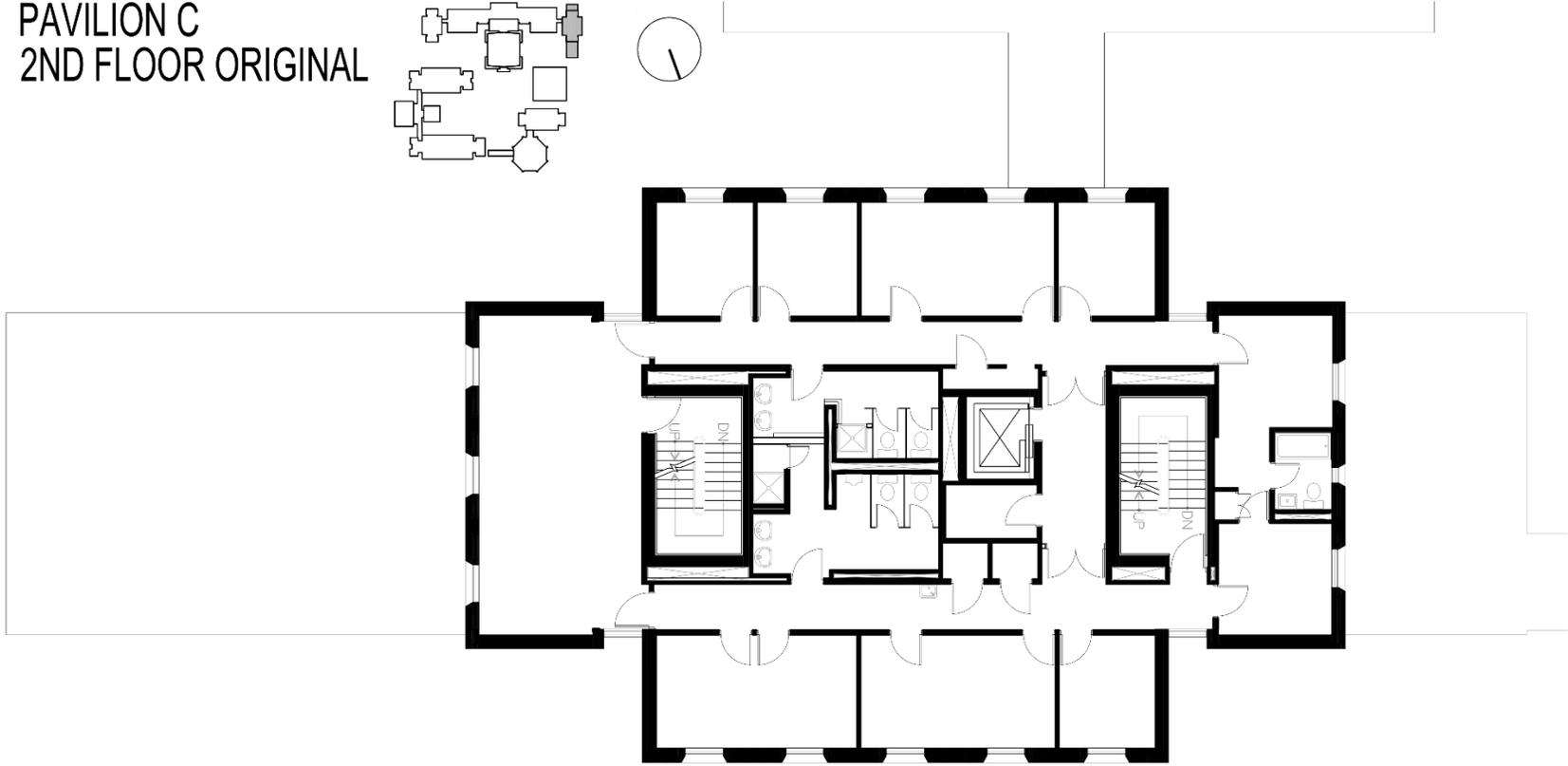


Figure 65: Original 2<sup>nd</sup> floor of Pavilion C

PAVILION C  
2ND - 6TH FLOOR

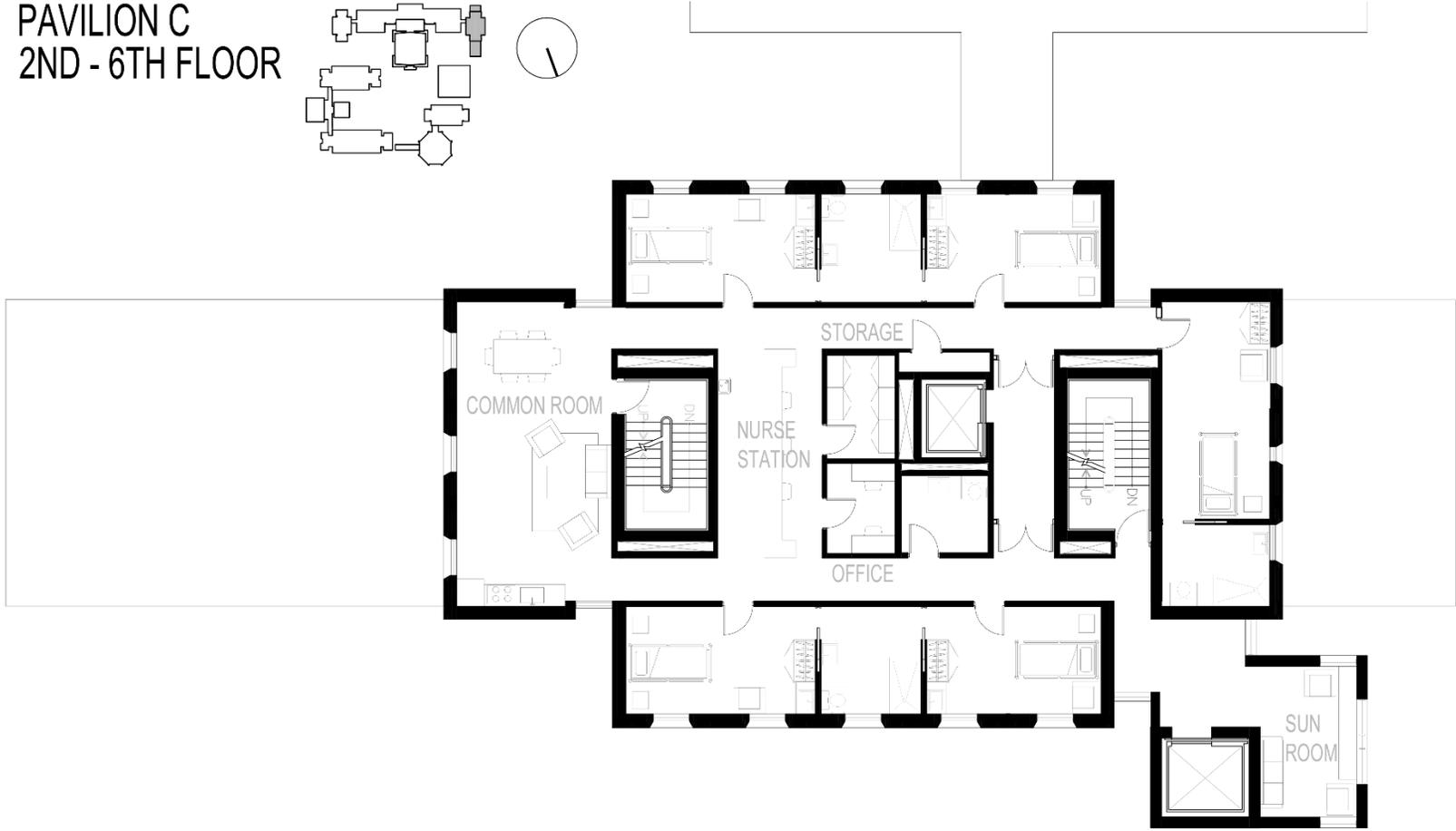


Figure 66: Reconfiguration of Pavilion C to a senior's long-term care residence

## CONCLUSION

The adaptive reuse of the Federal Study Centre provides a successful example of how the rehabilitation of heritage structures can address social, urban, and sustainable issues in the city. The redevelopment of the complex focuses on the need for inclusive and affordable housing within Ottawa, while also providing a sensitive and respectful adaptation of the campus that meets The Standards and Guidelines for the Conservation of Historic Places in Canada. As described in *On Altering Architecture* by Fred Scott, rehabilitation is the mediator between the acts of restoration and demolition. The act of altering or restoring a building allows it to be kept beyond its time, where the original building acts as a host for new work. According to The Standards and Guidelines for the Conservation of Historic Places in Canada, any sort of

intervention to a historic place should be physically and visually compatible with, subordinate to, and distinguishable from the historic place.<sup>137</sup> Harold Kalman also points out in his book *Heritage Planning* that the adaptive reuse of a historic place should make a positive contribution to the social, cultural, or economic context of the neighbourhood it is in.<sup>138</sup>

The design of the master plan brings together the resolution of several social, urban, and sustainable issues. Social issues such as the lack of affordable housing in Ottawa is addressed through the creation of an adaptive neighbourhood that offers various affordable housing types. Having a range of prices for units from below the market value, to luxury housing, allows for the economic sustainability of the site. Offering various programmatic elements directed towards

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<sup>137</sup> Standards and Guidelines, 34.

<sup>138</sup> Kalman, *Heritage Planning: Principles and Process*, 288.

the community in turn addresses the cultural context of the neighbourhood. For example, an indoor gymnasium is kept as an indoor activity centre for the children living in the area that will be beneficial during the cold winter months. Two existing pavilions are also adapted to house an immigration centre that caters towards the higher number of immigrants currently living in the neighbourhood. By reusing a site with existing buildings, the redevelopment speaks to urban issues regarding the neglect of vacant buildings and the need for the infill of urban areas. The reuse of existing buildings simultaneously provides a sustainable redevelopment option for the site when taking into consideration concepts such as embodied energy, embodied carbon, and durability.

The adaptive reuse of the Federal Study Centre improves the condition of affordable housing through architectural conservation and adaptive reuse. In Canada, affordable and social housing is run through the country's federal authority on housing, the CMHC. Initially the CMHC managed and funded all of the social housing programs in the country. Today, they continue to support housing by managing and creating numerous financial programs that target different aspects of housing. In 2017, the federal government announced plans for a new National Housing Strategy as part of their annual budget.<sup>139</sup> This strategy looks to once again allocate money towards housing through the CMHC and hopes to address the lack of stable funding put towards social housing. One of the suggested funding strategies that jump-started this thesis was the proposed use of vacant federal buildings or

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<sup>139</sup> Pomeroy, "Distilling the Tea Leaves: What the 2017 Federal Budget Really Means For Housing," 3.

lands as future sites for social housing developments. With Ottawa having a large government presence, this strategy became a worthwhile exploration. This potential funding strategy is combined with CMHC's concept on adaptable housing as a way to create an integrated solution between architectural adaptive reuse and affordable housing. At the scale of a community, adaptable housing means that a community should offer a range of housing types and a variety of different tenure options to allow residents to remain in the community that they have created over the years.<sup>140</sup> When looking at affordable housing in Ottawa, it is clear that there is an unmet demand for affordable housing that targets low-income households. Available research data showed that over 10,000 households are currently in need of affordable housing, with over a third of those households being families.<sup>141</sup> This

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<sup>140</sup> | <sup>140</sup> "Universal Design and Adaptable Housing Models," Canada Mortgage And Housing Corporation.

lead to the decision to make the housing units for the redevelopment of the site mostly geared towards families.

All of this is achieved while simultaneously respecting the existing heritage of the site. A master plan is created for the site that takes into account the heritage buildings and matches them to appropriate new uses while making room for the development of new buildings. Each existing building is analyzed to find a new use that does not impede on its heritage value and that requires minimal alterations to be implemented. All pavilions are adapted with a high level of preservation except for Pavilion M, which is demolished to provide room for more space-efficient housing. An example of the adaptive reuse design decisions is given through Pavilions C and J. These pavilions are used to show how their interiors can be

<sup>141</sup> "Households Archives," Ottawa Insights, accessed October 24, 2017

reconfigured for housing programs that also keep the heritage elements of the building intact. New buildings are created on the site in a way that respects the original planning done for the campus. The buildings are centered around outdoor courtyards and all vehicular traffic is kept to the perimeter of the site to allow all central circulation to remain pedestrian-oriented. The new buildings take design queues from the existing pavilions from their forms, massing, materiality, and proportions. This creates a design language for the site that is harmonious towards its history but helps to distinguish the new from the old.

## FURTHER RESEARCH

Due to time constraints, this thesis was able to incorporate a master plan for the adaptive reuse of the Campanile Campus and only a sample of an in-depth design of the heritage structures on the site. Two existing pavilions

were looked at for how the adaptive reuse design process would be carried out. If this project were to continue, all pavilions would be analyzed and the reconfiguration of their interior designed for their new use. Similarly, the new buildings incorporated on the campus were only partially designed. For the cohesiveness of the master plan, the form and exterior facades were created to show how the design of the new residential buildings were sympathetic towards the historic buildings. Only a general understanding of their programming and possible interior configuration was needed to design both the form and façade of each building. If more time was available to continue the design, the interior configuration for each new building typology would be created.

Another topic that would benefit from further exploration is the sustainability of the site. For the purpose of this thesis, sustainability was only briefly touched on as one of the benefits

that conservation and adaptive reuse can have. Under the topic of sustainability, there are various ways in which a building's sustainability can be measured and improved, ranging from minor changes to drastic interventions. There are also many methods that can be used to measure the performance of a building. If or when the redevelopment of the Federal Study Centre occurs, the current performance of all of the buildings would need to be measured in order to understand what needs to be improved. A sustainability target should be set in place for the campus and a plan put in place to achieve it. As with any new interventions created for the Federal Study Centre, the integrity of the campus' heritage must be kept in mind when creating a design. A balance must be struck between maintaining the heritage of campus for future generations and alterations that permit the complex to stay in use.

## FUTURE IMPLICATIONS

The master plan for the Federal Study Centre keeps in line with this idea of balance by working between maintaining the existing heritage structures and allowing room for the creation of new buildings and new uses. The successful adaptive reuse of the Federal Study Centre can be used as a case study for similar projects in the future. As brought up in the research on affordable housing, if the federal government plans to use their vacant buildings for affordable housing, it would be a useful strategy for a city such as Ottawa which has a large government presence. In the situations where an existing federal building will be redeveloped for housing, this project would be an ideal case study in terms of the decision-making process. While each adaptive reuse and heritage project is unique and needs to be treated in a case-by-case manner, the reasoning of design decisions still carries through

from project to project. For example, similar strategies can be used when deciding on how to alter an existing building and if, or when, a building should be demolished. In the coming years, this concept of converting a vacant government building to affordable housing may become an archetype in the city of Ottawa. The adaptive reuse of the Federal Study Centre will then become a starting point for future projects looking to address social issues through conservation and adaptive reuse.

# APPENDIX

## CONCRETE



### Copper Stain

An irregular green stain on the exposed, washed surface of the concrete. Copper oxides from copper roofs are dissolved by precipitation and deposited when in contact with concrete surfaces below.

Located on the concrete walls of the church and the theatre where water has dripped down from the roof.



### Crack

A separation of two portions of a masonry unit, though the relevant portions may still be locked together within the unit bonding of the wall.

Found in most building exterior walls, particularly where the concrete walls abut another material, as well as in some exterior concrete overhangs which connect with steel supports.



### Delamination

Planar surface loss due to separation that occurs along weakened connections between the exterior finishing and the interior structure of the concrete.

This type of degradation can be found on the concrete panels across the campus where sheets of aggregate-rich concrete are lifting away from the building.



### Detached Fragment

A loss of a portion of a concrete unit, due to a spall, mechanical impact, or other cause.

Located on buildings and pavers alike, this condition is particularly common at the corners of concrete panels.



### Efflorescence

The formation of white powdery salts on the exposed surface of the concrete, originating from sources including atmospheric pollutants, ground soil, decaying organic matter, or from the concrete materials themselves. This presence may indicate a moisture problem.

This type of degradation can be found across the campus, primarily underneath overhangs or other areas subjected to dripping water.



### Ferric Stain

An irregular stain on the surface of the concrete, ranging in colour from red to brown. Ferric oxides from iron or steel materials, embedded or attached to the masonry, are dissolved by precipitation and deposited onto adjacent surfaces.

Located in areas with exposed rebar or at the connections between railings and concrete supports.



### Filled Crack (Parging)

An existing opening that has been filled with a repair mortar or a type of parging.

This was specifically noted on the underside of the concrete overhang at the entrance of Pavilion C, but may occur at other similar locations across the campus.



### Moisture Stain

An irregular darkened area of a wall, which indicates the presence of excess humidity. The cause may be water infiltration from the exterior, saturation from the interior, or hygroscopic salts attracting airborne water vapour.

This is an especially prevalent problem visible on the concrete of nearly all the buildings, especially on the underside of overhangs. This was often paired with issues of efflorescence.

Figure A1: Concrete deterioration on site (Hoytema and Lengies, 2018.)

## CONCRETE



### Open Joint

A connection detail with pointing mortar missing or mostly missing from the joint.

This degradation was commonly seen between concrete panels and between concrete edgings surrounding the sunken gardens.



### Reinforcement Issues

A section of cantilevered concrete that is no longer supported as originally intended and is beginning to sag downwards due to gravity and possibly due to insufficient or degraded rebar within the concrete itself.

This was specifically noted on the cantilevered edge of the exterior entrance outside of Pavilion I.



### Spalling

Surface loss in the form of a fragment or segment of concrete due to point loading, thermal movement, ferric oxide expansion of fasteners or naturally occurring fissures and cracks.

This was a common concrete issue, particularly in areas with exposed rebar.

## BRICK



### Copper Stain

An irregular green stain on the exposed, washed surface of the brick. Copper oxides from copper roofs are dissolved by precipitation and deposited when in contact with brick surfaces below.

Located on the brick walls of the church and the theatre where water has dripped down from the roof and collected on top of a protruding concrete base.



### Crack

A separation of two portions of a brick masonry unit, though the relevant portions may still be locked together within the unit bonding of the wall.

Cracks can be found throughout the campus, especially on walls where settlement has occurred, causing the individual brick units to fail.



### De-Bonded Mortar

Failure of the mortar to remain attached to the surface of the bricks.

De-bonded mortar can be found across the campus, especially in areas affected by settlement cracking, which exposes the mortar to increased degradation.



### Detached Fragment

A loss of a portion of a masonry brick unit due to a spall, mechanical impact, or other cause.

Parts of the masonry walls across the campus are minorly affected by detached fragments, but this issue is most prevalent on Pavilion I, where a large portion of the first row of bricks is missing entirely.

Figure A2: Concrete and brick deterioration on site (Hoytema and Lengies, 2018.)

## BRICK



### Deteriorated Mortar

Masonry mortar that remains in the joint, but is eroded and generally friable.

This is a common issue in buildings across the campus, and is commonly seen at the corners of brick masonry walls where the mortar is increasingly exposed to weathering.



### Displacement

Evidence of non-specific movement of a masonry unit from its originally bonded position.

Several brick walls across the campus have evidence of displacement, likely due to settlement loads. This has caused the walls to settle unevenly, resulting in visible cracking and displacement.



### Efflorescence

The formation of white powdery salts on the exposed surface of the bricks, originating from sources including atmospheric pollutants, ground soil, decaying organic matter, or from the brick materials themselves. This presence may indicate a moisture problem

This is a common issue on exterior walls, particularly in areas characterized by poor drainage, such as areas below the edges of overhangs.

## WOOD & PAINT



### Alligatoring

An advanced state of cracking where an overall pattern of deep horizontal and vertical cracks form parallel and perpendicular to the wood grain similar to that of an alligator's skin.

This can be seen on the majority of windows across the campus, and is particularly of concern on window sills and at the base of wooden window jambs.



### Paint Peeling

Deterioration due to the lost adhesion between the paint film and the underlying coating or substrate, exposing the bare surfaces of the window frames and sills

Typically found on window sills, as well as other areas which are susceptible to the collection of moisture.



### Rot

A spongy wood condition, felt even through a coat of paint, which causes the wood to look darker than the surrounding areas. When dry, timber affected by rot will easily crack and crumble into fine particles.

This type of deterioration is common in the buildings on site, and is predominately found in the lower third of a window unit, specifically where the jambs connect to the sills.

Figure A3: Brick and wood deterioration on site (Hoytema and Lengies, 2018.)

## STEEL



### Corrosion

The deterioration of steel as a result of chemical reactions between it and the surrounding environment. This often leads to the metal becoming cracked, brittle, and weak.

This is found in many steel structural elements on site, such as rebars in concrete columns which have spalled, leaving the steel unprotected from the elements.



### Delamination

Failure due to repeated cyclic stress, impact, and weathering which causes the metal structure to separate into layers, resulting in a significant loss of mechanical toughness.

This occurs at the base of metal posts supporting the exterior stair railings at the church entrance, where the exterior layer of the post has broken off, exposing the now rusting metal interior structure to the elements.

## MISCELLANEOUS



### Bee Hives

The presence of beehives on buildings poses the risk of bees getting inside the structure should there be any openings and beginning to nest within. This commonly leads to damaged moisture barriers and potentially rotting wooden elements.

Remains of beehives have been located on buildings throughout the campus.



### Broken Glass

Cracked glass due to exterior impact of unknown cause.

Located on one of the windows on the south facade of the church.



### Bird Droppings

Bird droppings are highly acidic in nature and can eat away at paint, concrete and metal. After the rain, electrochemical reactions speed up the rusting process.

This can be seen on the angled copper roofs .



### Torn Window Screen

Due to unknown causes, the protective mesh screen is exposed to the elements and torn apart.

This condition is located at one of the windows on the east elevation of the church.

Figure A4: Steel and miscellaneous deterioration on site (Hoytema and Lengies, 2018.)

## SITE



### Overgrown

Due to lack of maintenance, the site has become increasingly overgrown with plants and brush, spreading over walkways and climbing up the walls of the buildings.



### Deteriorated Asphalt

Deteriorated asphalt paving is often a result of traffic loading, excess moisture in the substrate, freeze-thaw cycles, and lack of proper maintenance. This results in fatigue cracking, surface deformation, and potholes.

This can be seen along the paved roads which pass through the campus.



### Displaced Pavers

Shifting or loose pavers, commonly due to the freeze-thaw cycle of the ground underneath.

Most commonly found at pavement edges and around concrete columns already suffering from spalling and corrosion, such as those in front of Pavilion C.

Figure A5: Overall site deterioration (Hoytema and Lengies, 2018.)

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