

# REGENERATIVE URBAN COMMUNITY DESIGN

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## INTRODUCTION

*Global sustainable development is inextricably tied to the development of cities, as accelerating growth in urban populations becomes a major driver of social, environmental and ecological change. Cities are major consumers of natural resources and producers of pollution and waste. Development solutions that can reduce urban environmental impacts, as well as increase urban quality of life, are urgently needed. How to ensure that rampant growth in urban communities follows a regenerative and sustainable path therefore becomes a critical and increasingly relevant question.*

*This paper will define a working definition of urban sustainability against which to measure results and provide accountability, to evaluate how local policies can guide development either towards or against urban sustainability, and to evaluate to what extent third party metrics might exist to help guide the growth of cities. An 'on the ground' case study of a neighbourhood community redevelopment project in Toronto—as a representative North American project and city—will be used as a platform to test these ideas and to develop recommendations going forward.*

## KEYWORDS

LEED ND, urban sustainability metrics, community design, urban design, urban regeneration, sustainable redevelopment, LEED Gold secondary school, high performance school buildings, LEED Gold multi-unit residential

## SUSTAINABLE URBAN FORM

The term 'sustainability' can be so all-encompassing in its application that a broad definition is useful to help define the discussion. As Agyeman describes it, sustainable development is interpreted as 'the need to ensure a better quality of life for all, now and into the future, in a just and equitable manner, while living within the limits of the supporting ecosystems.'<sup>1</sup> He goes on to say that 'sustainable urban development is therefore a political and policy framework for improving the way we live . . . and the way we do business on this planet of finite resources.'<sup>2</sup> In this way policy and governance are brought into the equation as key drivers to sustainable development.

Actual expressions of an approach toward the creation of a sustainable community may include the incorporation of wide-ranging elements from the 'three pillars' of sustainability: environmental protection, economic development, and social equity. These varied attributes, according to Jones and Evans (2008)<sup>3</sup>, may include:

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- the provision of compact high-density development
- energy and resource efficient buildings
- the ability to attract development and create jobs
- facilitate mixed-use, diverse communities
- inclusive decisionmaking to assist in building social capacity

## POLICY AND METRICS FOR BUILT FORM

There is a growing impetus within the policymaking community to move away from questions of principle and definition.<sup>4</sup> Tools and approaches are being developed that attempt to translate the goals of sustainability into specific actions and assess whether real progress is being made towards achieving them. In tandem with metrics and tools, many government policies and regulations are being replaced with a more systematic and integrated set of policies. According to Harvey, “The future cannot be expected to look after itself: some sort of calculations are necessary . . . for sustainable development in the long run.”<sup>5</sup> Local policy can play a key role in the creation of sustainable communities, and, together with metrics, can work together to lead to measurable improvements.

In order to facilitate the widespread adoption of sustainable urbanism, specific benchmarks for design and development are essential. These benchmarks can give definition to the term ‘sustainability’, which in its more general use has become an umbrella term that ‘somehow encompasses any altruistic thought about the environment.’<sup>6</sup> In particular, metrics and benchmarks are useful for the measurement and verification of civic action on sustainability.

Three sustainability reform movements are noteworthy in that they define urban and community sustainability within an accessible and complementary set of metrics: Smart Growth, New Urbanism, and the green building movement. While all share an interest in economic, social, and environmental sustainability, they differ in their approach.

Smart Growth is primarily concerned with growth management and attempts to use planning, policy, and regulation to influence new development. Smart Growth policies are increasingly viewed by regulatory authorities as a positive framework for directing development. National Resources Defence Council (NRDC) defines Smart Growth as solutions that ‘reinvigorate our cities, bring new development that is compact, walkable, and transit-oriented, and preserve the best of our landscape for future generations’ The goal of Smart Growth is to prevent unplanned, haphazard, and undesirable effects of uncontrolled growth and suburbanization. The main goals of Smart Growth include:<sup>7</sup>

- Open space conservation
- Boundaries limiting the outward extension of growth
- Compact, mixed-use developments, amenable to walking and transit
- Revitalization of older downtowns, inner ring suburbs, and rundown commercial areas
- Viable public transit to reduce auto dependence
- Regional planning coordination
- Equitable sharing of fiscal resources

The Congress for New Urbanism (CNU) views disinvestment in central cities, the spread of placeless sprawl, increasing separation by race and income, environmental deterioration, loss of agricultural lands and wilderness, and the erosion of society’s built heritage, as serious problems which threaten community sustainability. New Urbanist principles are in general alignment with Smart Growth principles; however, a fundamental difference is the lack of

strict adherence to Smart Growth urban contiguity and infill principles. Many New Urbanist projects are located in suburban or exurban areas and as such are not necessarily urban, and use prescriptive urban form guidelines.

Leadership in Energy and Environmental Design Neighbourhood Development (LEED-ND 2009) is a prescriptive rating system that combines United States Green Building Council (USGBC) green building principles, Smart Growth, and New Urbanism policies. LEED-ND is intended to be applied to development projects that consist of anywhere from a small site with a few buildings to a large site with a maximum of 320 acres. There are four major categories in the LEED-ND rating system: Smart Location and Linkage; Neighbourhood Pattern and Design; Green Infrastructure and Buildings; Innovation and Design Process; and Regional Priority.

The objectives of the LEED-ND rating system are to improve energy and water efficiency, revitalize existing urban areas, reduce land consumption, reduce automobile dependence, promote pedestrian activity, improve air quality, decrease polluted stormwater runoff, and build more liveable, sustainable communities for people of all income levels.<sup>8</sup> This is consistent with the goals of Smart Growth and New Urbanism. This philosophy holds that essentially sustainable urbanism is a walkable and transit-served urbanism, integrated with high-performance buildings and high-performance infrastructure.<sup>9</sup>

LEED ND incorporates the original LEED for New Construction (LEED-NC), which is the industry-established green building certification system, first initiated by USGBC in 2003. LEED-NC has become a mainstream force that attempts to transform the building industry toward more sustainable construction practices. Energy efficiency is a core value of sustainable buildings, with the overall goal of reducing carbon emissions and related global warming. Categories in this credit-based rating system, which attempt to define a wide range of green initiatives, are Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials, Indoor Air Quality, and Innovation. The LEED-NC individual building credits inform the 'Green Infrastructure and Buildings' LEED-ND category.

## URBAN SUSTAINABILITY CASE STUDY—NTCI

Successful demonstration projects can become an important tool to learn from and evaluate, and can be useful in providing benchmarks against which to measure metrics. As Farr<sup>10</sup> noted, 'there are few more powerful tools of local reform than excellent model projects'. The North Toronto Collegiate Institute Redevelopment (NTCI) project, in Toronto, Ontario, will be used as a case study exemplar. This project, completed in 2010, redeveloped Toronto District School Board (TDSB) lands as mixed institutional, residential, and open space development. The school and residential components of the project have each achieved LEED Gold certification. The LEED ND rating system will be retroactively applied as part of this study to see if these metrics can usefully assist with recognizing urban sustainability.

### NTCI Process

The TDSB released a Request for Proposal (RFP) in 2004 seeking a development partner in the redevelopment of the 5.2-acre NTCI lands. The NTCI Redevelopment project was intended to create an exemplary sustainable, state of the art replacement secondary school and integrated residential development, with guiding criteria including design excellence, sustainable design, a competitive financial package, and a participatory design process.

**FIGURE 1.** North Toronto Collegiate Institute Redevelopment.



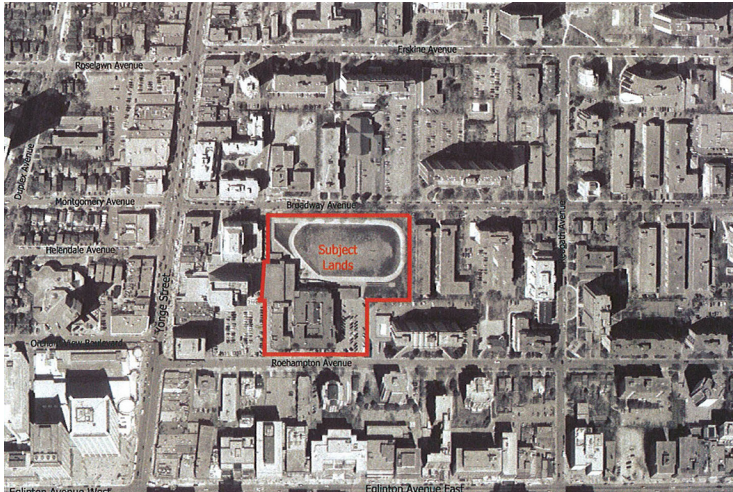
The process for the selection of a development partner was conducted through a Request for Proposal (RFP) process, using a community pre-approved massing envelope. The process included politicians, TDSB staff, administrators, and community partners (the Sherwood Park Residents Association (SPRA) and the Federation of North Toronto Residents Associations (FoNTRA). The developer/builder Tridel Incorporated was selected, together with CS&P Architects as Lead Architect.

In 2005, the Toronto District Board approved the sale and redevelopment of 0.7 acres of land to Tridel.<sup>11</sup> This public/private partnership between the Toronto District School Board and Tridel Builders was made possible through a unique transaction between the Toronto School Board and Tridel to obtain construction funding leveraged from the residential development. Deltera, the construction arm of Tridel, was responsible for constructing the school and residential component using construction management. A sequential tendering process incorporated economies of scale cost savings to the school board. Construction on the project started in November 2008, and was completed in Summer 2010.

### ***NTCI Project Overview***

The NTCI site contained the existing 1915 gothic collegiate secondary school, which had undergone numerous additions over time. The facility as a whole was deemed to be functionally inadequate, and included a noncompetitive track and field size. The original school itself had suffered structural deterioration and a retrofit was not considered a feasible option. There was significant interest on the part of the TDSB in the idea of a redevelopment on this key site as a means to assist the TDSB with funding a replacement school. The site was very





**FIGURE 2.** Existing Site.



**FIGURE 3.** Existing NTCI School.

appropriate for residential intensification, as it was located in midtown Toronto, in close proximity to local amenities including major public transit (within 500 m), the Yonge Eglinton node, a vibrant retail main street, and an established residential neighbourhood.

The redevelopment project program included providing a 156,000 sf replacement secondary school facility, two residential buildings with a total of 450 units, a north south playfield, and a tree-lined public pedestrian walkway as a new through block public access.

### ***NTCI Design***

The new four story secondary school building was designed to accommodate 1,206 students and included science, art, music and drama classrooms, a 600-seat theatre, library, and a triple gymnasium. The design for the school was conceived around a major courtyard space, providing daylight, views, orientation, and accessible outdoor social and program space. Significant heritage façade components of the original gothic collegiate NTCI were salvaged and integrated into the design of the courtyard, conceptually embedding the original school and reinforcing its symbolic presence as the heart of the new building. School amenities such as the triple gymnasium, track and field, 600-seat theatre, music rooms, specialty classrooms, and library were planned to be accessible as a community resource for after school

**FIGURE 4.** NTCI Arial View from the North West.



The 24 and 27 story residential buildings were constructed as part of the overall school complex, but with clearly identified and separate entrances, designated parking, loading, and amenity areas. A broad mix of units were offered, providing affordability to a range of users. Knock out panels between units were provided to accommodate future flexibility for larger suites, as requested by the City to encourage greater diversity of users.

The design process was an intense consultative process, guided by the Local School and Residential Community Design Team, which included community representatives, politicians, students, parents, staff, alumni, and the development team. In addition, a Heritage Working Group comprised of the principal, teachers, archivist, architects, and a heritage preservation consultant addressed the more detailed issues of the school heritage preservation strategy. The community participation in the design of both the school and the residential buildings has set a precedent for similar integrated developments both locally and regionally.

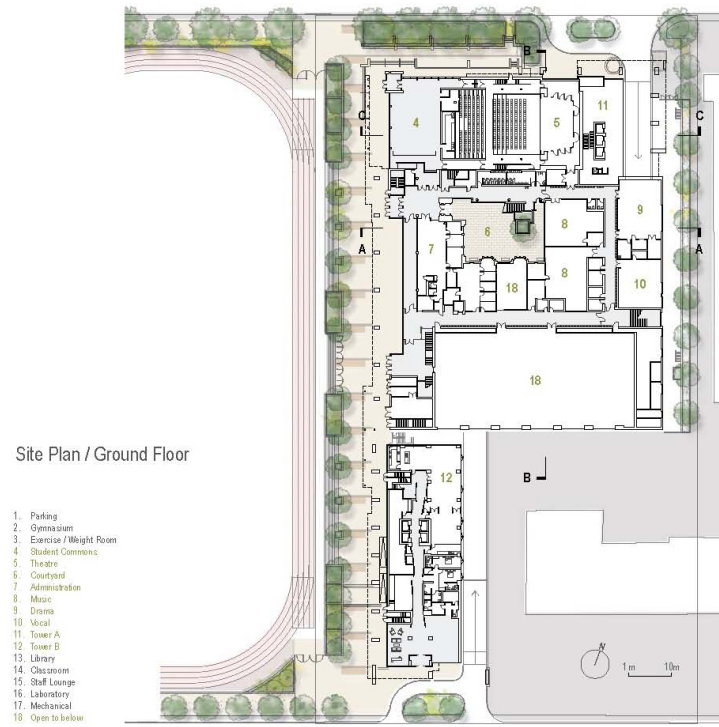
### ***NTCI Policy Context***

The 2005 Ontario Provincial Policy Statement (PPS) stated goals are to protect the environment, public health and safety, to facilitate economic growth, promote efficient development and land use patterns, and support strong, liveable and healthy communities.<sup>12</sup> The policy promotes residential intensification in built up areas, and is consistent with Smart Growth principles. Land use patterns are to be at a density and mix that efficiently uses land, infrastructure, resources, and public service facilities. Compact form is encouraged, as well as efficiently using existing infrastructure, with a particular emphasis on public transit synergies.

The Places to Grow Act (2005) directs growth within the Ontario Greater Golden Horseshoe (GGH) to the existing urban areas in order to make better use of land and infrastructure. The Act envisages increasing intensification of existing built up areas, with a focus on urban growth centres, intensification corridors, major transit station areas, and brownfield sites. Goals can be summarized as follows, and are consistent with provincial objectives:<sup>13</sup>

- Direct a significant portion of new growth to the built up areas of the community through intensification
- Focus intensification in intensification areas

**FIGURE 5.** NTCI Ground Floor Plan.



**FIGURE 6.** NTCI North Elevation.





- Build compact, transit supportive areas
- Reduce dependence on the automobile through the development of mixed use, transit supportive, pedestrian friendly urban environments

The Toronto Official Plan (2002) states that growth within Toronto is expected to grow by 2.7 million residents and 1.8 million jobs by the year 2031. The Plan does not contain specific density goals but rather focusses policy on intensification, built form and growth supported by transit, walkability, and quality of built form and urban design, consistent with provincial objectives. These objectives are consistent with Smart Growth and transit-oriented objectives. As per Section 2.2, Structuring Growth in the City: *‘ . . . future growth within Toronto will be steered to areas which are well served by transit, the existing road network and which have a number of properties with redevelopment potential. Generally, the growth areas are locations where good transit access can be provided along bus and streetcar routes and at rapid transit stations.’*<sup>14</sup>

Key objectives for managing sustainable growth include:<sup>15</sup>

- Use municipal land, infrastructure, and services efficiently
- Concentrate jobs and people in areas well served by surface transit and rapid transit stations
- Create assessment growth and contribute to the City’s fiscal health
- Promote mixed-use development to increase opportunities for living close to work and to encourage walking and cycling for local trips
- Offer opportunities for people of all means to be affordably housed
- Facilitate social interaction, public safety, energy efficiency, and reduce greenhouse gas emissions
- Improve surface and ground water quality
- Protect neighbourhoods, green spaces, and natural heritage features

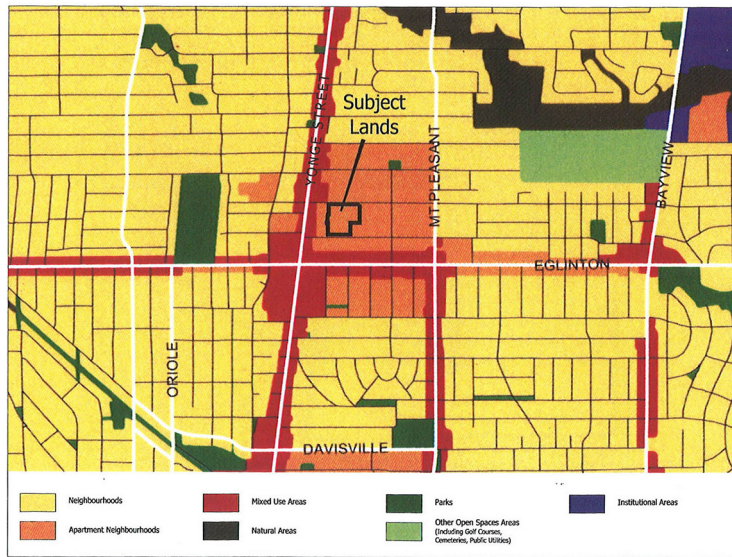
**FIGURE 7.** NTCI Broadway Avenue View.



**FIGURE 8.** NTCI Walkway View, looking south.







**FIGURE 9.** City of Toronto Official Plan 2002, Land Use.

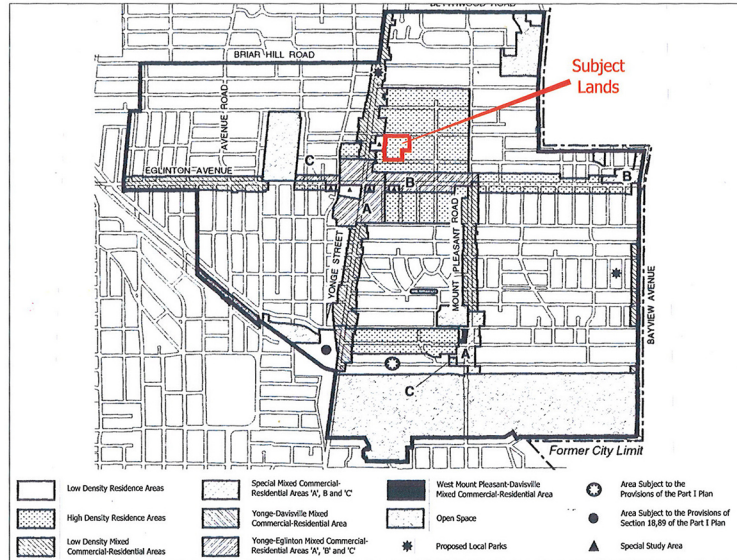
The City of Toronto Environmental Plan (2004)<sup>16</sup> incorporates Official Plan goals, and promotes environmentally-sustainable development and urban form. Re-urbanisation of the city is envisaged to accommodate large increases in population and employment opportunities, as per the aggressive targets in the Official Plan. Compact growth is directed to those areas of the City where infrastructure capacity already exists. As a specific outcome of these environmental targets and policies, the City of Toronto mandated very progressive local Green Development Standards (2010), which included a checklist of green initiatives. The GDS checklist includes environmental criteria relating to site, energy, water, and air, as well as some very unique locally significant criteria such as the need to maintain tree canopy coverage and bird-friendly glazing. A green roof bylaw was created in 2010 and calls for the provision of green roofs for certain sizes and types of building, the first bylaw of its kind in North America.

### ***NTCI Policy Analysis***

The NTCI development is consistent with the policy direction established at both Provincial and City levels, which supports residential intensification within built up areas, particularly in areas well served by public transit and existing infrastructure. The existing pre-redevelopment site, which contained the existing school facility, was originally developed at .75 Floor Space Index (FSI), well below the existing density limit of 2.00 FSI coverage. The introduction of residential uses assisted the school board in funding a portion of the redevelopment and at the same time met City intensification and revitalization planning objectives. The intensification of the site contributes generally to the achievement of all of the objectives associated with reorganization, such as reducing sprawl and automobile dependence, promoting the use of transit and walking, and contributing to mixed-use vitality and activity.

From an urban design perspective, the proposed built form achieves the sustainable urban design objectives set out City of Toronto Official Plan. The new building fits well into the high-density residential neighbourhood and is contextually appropriate for the site. The proposed playing fields to the west, and the publicly accessible pedestrian walkway through

**FIGURE 10.** Yonge Eglinton  
Part II Plan, Map A.



the site, break up the 'super block' and provide access and views from two public streets. The location, configuration, and massing of the new buildings reinforces and contributes to a more vibrant and accessible public realm.

The site is in close proximity to local amenities, including public transit, a vibrant main street, and an established residential neighbourhood, all of which support the intensification of the site and City re-urbanization targets. The redevelopment of the NTCI school benefits the community by providing a state-of-the-art educational facility and improved open space and recreation facilities, both available as a community resource.

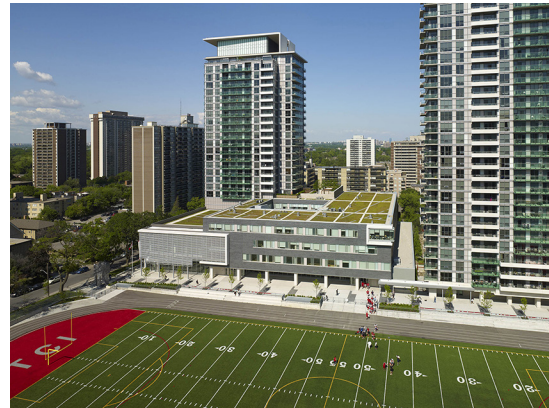
The configuration and location of the principal building components reinforce the edge conditions of the public realm, which includes Broadway Avenue, Roehampton Avenue and the new public walkway which connects both streets. The three major pedestrian routes have a high level of landscaping and public amenity in order to improve the area's open space network, with existing mature trees preserved and incorporated into the sidewalk and school plaza design. The new tree-lined walkway's length is developed as a public space with public art, new lighting, public amenities, concrete bleacher seating facing both the field and the raised walkway level, and convenient access to the field and the school. The design of the walkway as a major new open space is intended to encourage and support social activity and animation along its length, as an integral piece of a new 'front porch' to the school.

The individual identity of each of the buildings on site is articulated while creating an integrated, coherent composition both at grade level and from a distance. The use of various linkage elements such as an arcade, a shared material palette of glass type and colour, and an articulated alignment of floors and roof levels at the top of the school, contribute to the visual continuity and coherence of the development. Entrances for the two residential buildings are set back from the façade line of the buildings and from the school, effectively reducing the height impact of the buildings at grade level. A strong civic presence is established at the school's corner entry where the Theatre & Student Commons are prominently displayed through a dramatic use of glass, sunshade screening, and vertical zinc cladding.

**FIGURE 11.** NTCI Playing Fields Bleachers.



**FIGURE 12.** NTCI Walkway View, Looking North East.



## LEED ND ANALYSIS

The LEED ND rating system contains within it the amalgamation of Smart Growth, New Urbanism and green building metrics, which together are driving mainstream urban sustainability policies. As these tenets are supported by Ontario provincial and municipal policies, it could be an appropriate rating system to use in the Toronto context. Therefore, as part of this case study analysis, the LEED ND system will be ‘retroactively’ applied at a conceptual level to see if it can assist in a useful way in recognizing and evaluating the urban sustainability of the NTCI project. In practice, LEED ND is usually applied to very large neighbourhood revitalization developments (maximum size 320 acres);<sup>17</sup> however, the actual intent of the rating system is that it can be applied to very small sites, with no minimum size, and containing a minimum of only two habitable buildings.

### *Smart Location and Linkage*

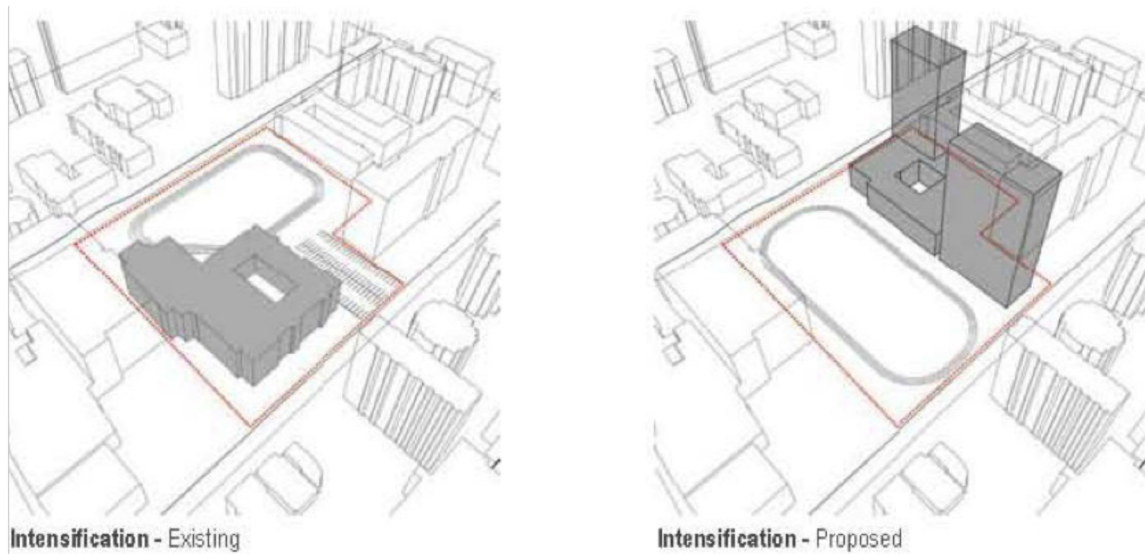
As the NTCI project is located within an urban node, and is an urban infill project on a predeveloped site, it is automatically eligible for the maximum 10/10 points in the preferred location category. Reduced automobile dependence due to transit proximity gains 7/7 points, and housing and jobs proximity 3/3. The brownfield credit 1/1 is achieved as there was soil contamination discovered on site during construction.

### *Neighbourhood Pattern and Design*

The walkability credit involves rating many specific measures such as building setbacks, continuity of sidewalks, transparency and glazing ratios, and on-street parking provisions. The NTCI project achieves 4/12 possible points for walkability, which is a fairly low score largely because many of the available points are reserved for retail and low rise residential uses. The project achieves 5/6 possible points for compact development and density, as it has an FAR of 2.99, with an FAR of 3.00 providing the maximum number of points. Land use efficiency is achieved by minimizing the building footprint and maximizing community open space. Mixed-use neighbourhood centres also score highly at 4/4 possible points, as the site is located adjacent to a major retail strip with many varied amenities close by. The mixed-income diverse



**FIGURE 13.** Intensification Strategy for the NTCI Site.



communities category scores very low at 1/7, as the residential project mix does not include any special provisions for affordability. All the units are market oriented, and have a low Simpson Diversity Index, as many of the dwelling units in the project are of the same type. The street network credit was not possible as the site is located within a 'superblock' apartment neighbourhood with very large existing blocks. The addition of a through-block walkway is not eligible for any credits.

### ***Green Infrastructure and Buildings***

The high performance building school and two condominium buildings are certified LEED Gold, which earns 3/5 points for Certified Green Buildings. The residential buildings and school use advanced energy efficiency strategies such as radiant floor heating and cooling, displacement ventilation, high performance envelope, concrete thermal mass, heat recovery, best practice commissioning, and verification and monitoring. Day lighting has been adopted as a primary design feature for the project, significantly impacting orientation and building layout. Day lighting design features also contribute to energy efficiency objectives by utilizing the thermal mass of the building to harvest passive solar energy. Window and glazing design increases passive solar heat gain in winter and minimizes cooling load in summer by shading windows. These measures together increase energy efficiency by 30–40% over the MNECB, reducing GHG by 1400 tonnes, which earns 2/2 points for Building Energy Efficiency.

Water consumption is reduced by 17 M L annually, and includes sub metering of residential water and utilities, which earns 1/1 point. High Efficiency Irrigation is used minimally, so 1/1 point for Water Efficient Landscaping is earned. An extensive green roof over the school provides 1/1 point for heat island reduction. The green roof also aids in stormwater management water retention, and together with the stormceptor cistern under the field to trap and slowly release stormwater, the project earns 2/4 points for Stormwater Management.

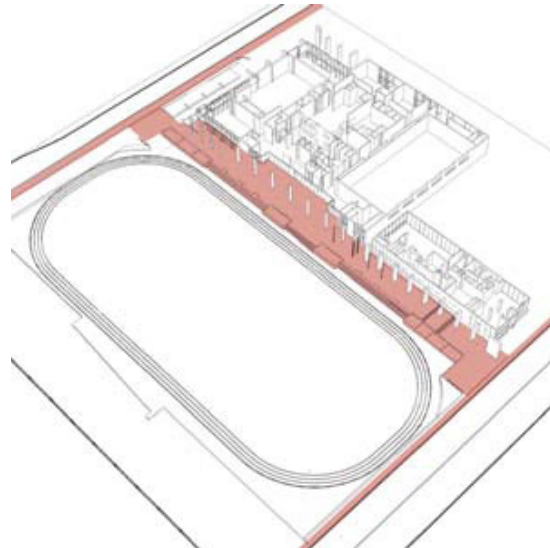
### ***Regional Priority Credit***

Regional Priority Credits are credits that have been deemed by local stakeholders to be of special significance to the regional area. They can be re-counted as bonus points if they are achieved. As there are presently no regional priority credits developed for Canada, and for the purposes of this exercise, I will use the credits established by Boston as a comparable urban region. Regional priority credits for Boston include energy efficiency, civic and public space, and brownfields, which can be achieved on the NTCI site, for 3/4 credits. Mixed-income diverse communities, reuse of buildings, and transportation demand management plan are other possible regional credits not achieved.

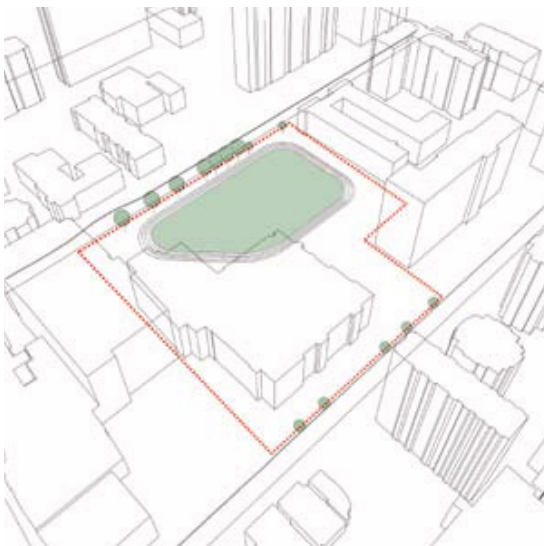
**FIGURE 14.** NTCI Site Plan.



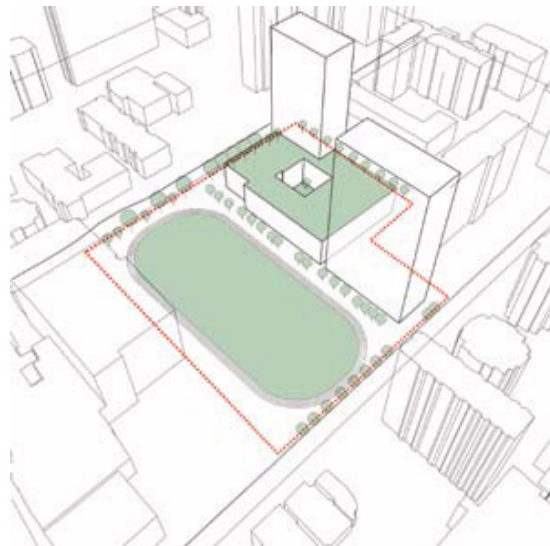
**FIGURE 15.** NTCI Through-Block Walkway.



**FIGURE 16.** NTCI Existing Green Space.



**FIGURE 17.** NTCI Proposed Green Space.



### ***Innovation and Design Process***

It is assumed that 2/6 points can be achieved for exemplary recycling, construction waste management, as both innovation points that were achieved in the LEED Gold certification process. One point is expected for the innovative heritage strategy.

In summary, a possible NTCI Redevelopment LEED-ND point score shows that 62 points may be able to be achieved out of a maximum of 106 points, and which could therefore achieve LEED-ND Gold. The breakdown summary is as follows:

Category	Points Achieved	Possible Points
Smart Location and Linkages	21	30
Neighbourhood Pattern and Design	22	39
Green Infrastructure and Buildings	13	31
Innovation & Design Process	3	6
Regional Priority Credit	3	4
<b>Total</b>	<b>62</b>	<b>106</b>

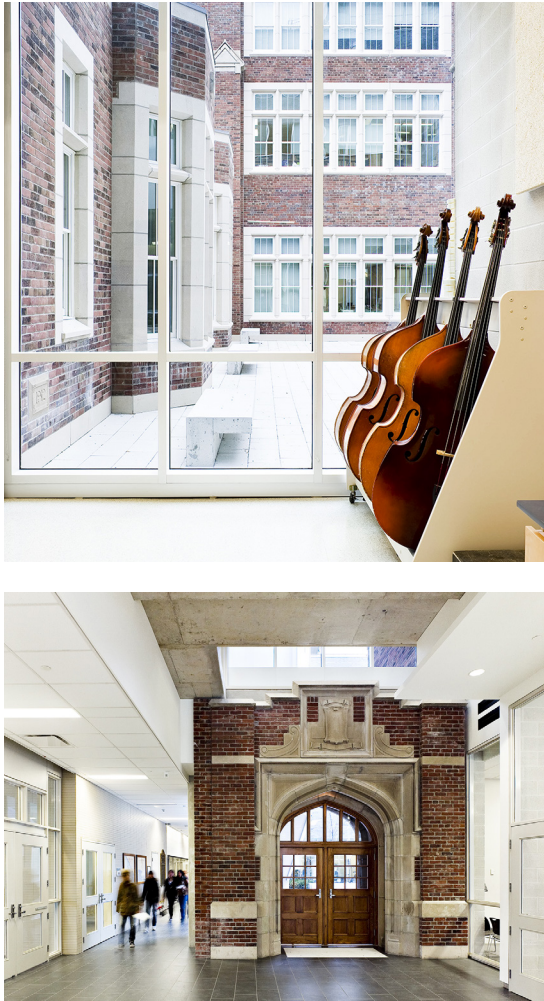
### **LEED ND EVALUATION**

The LEED ND Smart Location and Linkages category rewards projects that utilize the principles of Smart Growth, which Ontario provincial policies largely support. As NTCI supports the OP and PPS, there is a synergy that is rewarded with a high number of ND credits. The NTCI project has conceptually achieved LEED ND Gold fairly effortlessly. It should be noted, however, that approximately 40% of the LEED ND points targeted can be attributed solely to the fact that the project is located in an inner city mixed-use urban area, on an infill site. For instance, 21/62 points were a result of the preferred location alone, with another 5 points awarded for compact intensified development.

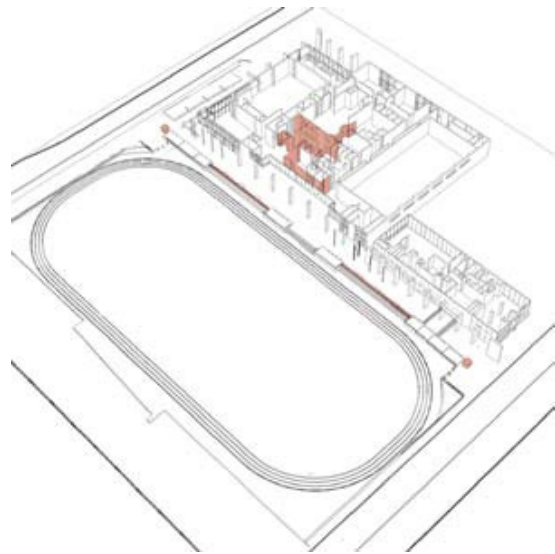
As LEED ND is a credit checklist system, the weighting of one category over another is achieved by the number of available points in that category. It may be argued that this system may be subject to missing many possible sustainable innovations, and possibly over rewarding other initiatives or site conditions. In the quest for a rating system that finely balances social, economic, and environmental issues, there is a danger that quantitative goals that are easily measured may take priority over softer, more qualitative goals. For example, one of the few socially-oriented credits of mixed-use diverse community, which relates to housing affordability (7 possible points), is quite easy to forgo and still do quite well in the overall rating. As another example, only two credits are available for energy efficiency of the individual buildings, which many would argue should be much more highly incentivized. It should also be noted that some sustainability measures within the NTCI project cannot be captured, such as the innovative financing mechanism used, the beneficial public/private partnership established between Tridel and TDSB, the use of an integrated design process, or the unique heritage preservation strategy. It could be that the innovation credits, however, which are somewhat flexible, may be able to address some of these contextual subtleties.

In any system meant to address the complexity of different site and project factors, a checklist approach can also be a very accessible and attractive tool to the industry as it is clear, easily understandable, and broadly applicable. It can be customized to the project by simply choosing a unique combination of credits. However the checklist is also a weakness, as it





**FIGURE 18.** NTCI Heritage Preservation Strategy.



is unable to fully capture the personality and uniqueness of a project because it is eternally geared to a 'generic' project. For instance NTCI scored fairly low in the walkable streets category because the points were geared to main street type retail and low rise residential.

## CONCLUSION

We have seen the built form outcome of the NTCI case study as reflective of overarching provincial and municipal planning goals for revitalization, intensification, and compact walkable cities. It also conforms to LEED ND Gold metrics. Is it enough to claim that these existing policies and metrics can help to guide a general sustainable and regenerative transformation of our cities?

It should first be noted that sustainability as a term is a reflection of its 'fluid and context dependant meanings,<sup>18</sup> and that sustainable development can become 'a catchall for many of humanity's diverse environmental concerns and responses. . .<sup>19</sup> The danger therefore is that sustainability policies and metrics can mean too many things, be imprecise, and therefore, as a guiding theme can be somewhat abused, as policies can often be justified that are not necessarily equitable or even sustainable.

A one-size-fits-all policy can imply a universal acceptance of goals in all situations, which can cause conflict in some cases as 'what benefits one may hurt another.'<sup>20</sup> For example, as Bunce outlined in a scenario of unintended social consequences of intensification, 'The literature on policy led gentrification is important for understanding how sustainability and intensification policies have become cornerstones of public urban policy agendas, and further, how the focus of these agendas emphasizes a middle to upper income habitation of existing city spaces.'<sup>21</sup> For instance, in the case of NTCI, the development may promote gentrification of the area and resulting dislocation of the existing residents of the apartment neighbourhood.

The desire for balanced outcomes speaks to the vast complexity of a city, and how difficult or even impossible it would be to predict all of the endless interactions that can occur between different aspects of the city as a whole: as Kaika said, 'Cities are dense networks of interwoven socio-spatial processes that are simultaneously human, material, natural, discursive, cultural, and organic.'<sup>22</sup> This complexity means that success can only be truly measured against on the ground actual results. Actual results should address a balanced approach to sustainability, including an improved and equitable quality of life, and resource and ecological respect.

Metrics such as Smart Growth, New Urbanism, LEED ND, and local and regional policies that support this direction, can be useful toward achieving sustainable metrics. They are necessarily biased toward broad brush, one-size-fits-all, and quantitative goals, as they need to be able to address all situations in a fairly generic and accessible methodology. It is hoped that these policies and metrics can be broadly used, evaluated, and further refined toward a next generation of more flexible and context-specific policies and metrics: They should incorporate continuous feedback from the built form outcomes of the first generation of policies and metrics. These responsive policies and metrics can then assist in creating more clearly defined and balanced urban sustainability outcomes. Policy goals and associated metrics will require substantive direction and measurement methodologies to assist in setting the quantitative and qualitative objectives that guide development in a direction that facilitates the vibrant, mixed-use, and walkable cities of the future.

## NOTES

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