

## Sustainability Strategic Plan:

### Vision, Goals and Implementation

Revised - April 18, 2019

#### Northland Newton Development, Newton, MA Northland Investment Corporation

#### Project Description

Northland Investment Corporation is transforming 22 acres of underutilized and mostly vacant industrial and commercial property in the village of Newton Upper Falls into an exciting and thriving new mixed-use community development that will embrace sustainability and innovation. The project will enhance the neighborhood by providing office and retail space as well as 800 residential units in 15 new buildings and one renovated historic building.

#### Project Sustainability Goals

The Northland Newton Development will achieve success in all three areas that comprise the definition of sustainable development - development that benefits *people*, the *planet* and generates *economic prosperity*. The goals and strategies that benefit one of the categories in the three-legged stool of sustainable design also have beneficial outcomes for the other categories.



With its holistic approach and fully integrated design and development team, Northland Newton Development seeks to create a sustainable new neighborhood that will enhance the lives of people, protect the planet's resources, and generate long-term prosperity to ensure the enduring success of the project.

The Northland Newton Development is located within the N<sup>2</sup> Innovation District<sup>1</sup> which seeks to foster innovative companies and connect them with a talented local workforce. The project embraces this concept and inherently meets one of the tenets of smart growth development by creating jobs within walking or biking distance to residents within the same community. The Northland Newton Development will also

---

<sup>1</sup> [www.n2innovationdistrict.com](http://www.n2innovationdistrict.com)

embrace the mission of Green Newton, a local active non-profit working “to create sustainable solutions to environmental problems facing our city and our world.”<sup>2</sup>

The sustainability goals of the Northland Newton Development, integrated from the earliest phases, directly align with many of the goals set forth in the Needham Street Area Vision Plan 2018 which was adopted by the City of Newton in August 2018.<sup>3</sup> This ambitious plan provides the desired vision for future developments in the Needham Street corridor in order to create a diverse, thriving mixed-use district. The following goals are all priorities directly outlined within the Vision Plan and have already been incorporated into the design of the Northland Newton Development, as detailed further in the sections that follow. Page numbers correspond with the Vision Plan document:

- Create a vibrant destination with a diversity of uses including homes, businesses, and gathering places for the community (p.29-33).
- Reflect the industrial history and heritage of the area (p.5; 30).
- Embrace climate resiliency through reduction of single-occupancy vehicles, maximizing energy efficiency of buildings, and reducing heat island effect (p.12).
- Utilize high-quality and high-performance design and construction of new buildings with a focus on energy efficiency (p.40).
- Support healthy lifestyles with the creation of diverse, multi-use, natural areas and public open spaces (p.11).
- Protect and restore the ecological health of natural resources through low impact design, stormwater management, and the creation of open space (p.11-14).
- Expand trails, walking loops and open space connections on a local and regional level (p.15).
- Create safe and convenient transportation connections as well as diverse options for transit, walking, biking and driving (p.19).
- Utilize design to encourage active lifestyles and promote community social connectedness, health and wellness (p.36).

The Northland Newton Development will engage the community and embrace these principles by creating a vibrant new Main Street, an extensive network of landscaped and active outdoor public spaces, connections to the Upper Falls Greenway and other pedestrian paths, introduction of a mobility hub for alternative transit options, as well as creating a new central village square for community gatherings and events. Additionally, the project will be providing a bike path connection from and to the Greenway along Charlemont, all the way to Christina Street (behind the former Stark property), with hopes to link to an eventual connection across the Charles River into Needham. The renovation of the historic Saco-Petee mill building as well as the preservation of other historic industrial resources for reuse on the site will maintain and improve important community cultural assets. Design and construction of all new buildings on the site will meet high standards for sustainable design as outlined in detail in the sections below.

#### **Leadership in Energy and Environmental Design (LEED) Goals**

The project includes several goals for attaining Certification with the US Green Building Council's (USGBC) LEED Green Building Rating Systems. The commitment to the rigorous internationally-recognized third-party LEED standards demonstrate a project-wide commitment to high performance design and construction with quantifiable environmental benefits such as energy and water use efficiencies.

---

<sup>2</sup> [www.greennewton.org](http://www.greennewton.org)

<sup>3</sup> Needham Street Area Vision Plan 2018, Adopted by the City Council on August 13, 2018; [www.newtonma.gov/gov/planning/lrplan/comprehensive\\_plan.asp](http://www.newtonma.gov/gov/planning/lrplan/comprehensive_plan.asp)

“LEED provides a framework that gives project teams the ability to choose solutions that contribute to aggregate environmental progress.”<sup>4</sup> The United Nations Environment Programme’s 2009 Building and Climate Change Report stated that buildings account for approximately 40% of our total energy use.<sup>5</sup> In a 2011 study of the U.S. General Services Administration’s LEED-certified buildings, the Department of Energy found LEED-certified buildings to have 25 percent lower energy use compared to the national average.”<sup>6</sup>

More recently, the USGBC has found that LEED buildings, on average, save between 30-40% of the energy and water used in buildings of conventional construction. LEED buildings also lease up faster and have higher employee productivity in office spaces.<sup>7</sup>

The USGBC recently announced the 2018 Top 10 States for LEED projects, and Massachusetts ranked second in the nation for gross square footage of LEED-certified space per person. “The benefits of LEED extend well beyond measures like reduced water and energy usage, affecting the health and prosperity of entire communities. LEED-certified projects save money for families, businesses and taxpayers, in addition to reducing carbon and creating a healthier environment in which people can thrive.”<sup>8</sup>

The entire 22-acre Northland Newton Development is registered and will pursue LEED for Neighborhood Development (ND) v3 Certification at the Silver level. The project team elected to pursue LEED-ND which is an ambitious rating system consisting of sustainable planning and design strategies implemented across entire new neighborhoods and developments. Credits are organized into the four categories of Smart Location and Linkage, Neighborhood Pattern and Design, Green Infrastructure and Buildings, and Innovations. LEED-ND Certification is a unique and significant goal as there are only three projects in Massachusetts that have achieved it to date.

In addition, the historic Saco-Pettee mill building will be fully renovated into high quality office space with the goal of achieving LEED Core and Shell (CS) v3 Certification at the Silver level.

All new buildings within the Northland Newton Development will be designed to be LEED ‘Certifiable.’ In pursuit of this goal, every building will achieve energy and water use savings that exceed standard projects built in Massachusetts.

Summarized below are the sustainable design and construction strategies that the Northland Newton Development will incorporate, some of which are included in LEED and other green building rating systems, and all of which are elements of good design that benefit people, the planet and also generate prosperity in order to achieve long-term viability.

#### **Site Design and Landscaping**

The project will reduce its use of potable (drinking) water for landscape irrigation by installing highly efficient irrigation systems where necessary to maintain plantings and will also seek to reduce the need for irrigation by specifying drought-tolerant and indigenous plants where appropriate. The project will incorporate the capture and reuse of rainwater from the building roofs for irrigation needs, further reducing the demand for potable water resources.

---

<sup>4</sup> [www.usgbc.org/articles/leed-facts](http://www.usgbc.org/articles/leed-facts)

<sup>5</sup> [europa.eu/capacity4dev/uneep/document/buildings-and-climate-change-summary-decision-makers](http://europa.eu/capacity4dev/uneep/document/buildings-and-climate-change-summary-decision-makers)

<sup>6</sup> [www.usgbc.org/articles/leed-facts](http://www.usgbc.org/articles/leed-facts)

<sup>7</sup> [www.usgbc.org/articles/download-our-free-leed-slide-deck-your-next-presentation](http://www.usgbc.org/articles/download-our-free-leed-slide-deck-your-next-presentation)

<sup>8</sup> [www.usgbc.org/articles/infographic-top-10-states-leed-2018](http://www.usgbc.org/articles/infographic-top-10-states-leed-2018)

Stream restoration and the partial daylighting of South Meadow Brook is an important aspect of the project in terms of both ecological restoration and community awareness about natural resources in the area. Invasive plant species will be removed to the extent possible on the stream banks in order to foster natural vegetation and support healthy stream ecology. Low Impact Design (LID) strategies will be employed in the design of stormwater management systems across the site to reduce stormwater runoff into the stream and to improve the stream water quality. Permeable paving will be used to allow for infiltration in some areas and reduce stormwater runoff. 'Daylighting' a portion of the stream, thereby bringing a section of it out of the underground culvert and into an above ground channel again, will allow the community to experience this natural feature and learn about the local stream ecology.

### Heat Island Effect Reduction

Heat island effect occurs when a dense, metropolitan area is significantly warmer than the surrounding rural areas due to human activities. The main cause of urban heat island effect is the increasing change of natural surfaces into hard surfaces, like pavement and roof areas, which absorb and retain heat from the sun.

The Northland Newton Development, in line with the goal of the Vision Plan mentioned above, will reduce heat island effect on the site by utilizing the following strategies:

- Providing a network of green/landscaped open spaces and parks with shading and moist planting materials which provide cool surfaces as opposed to pavement and dark-colored materials.
- Shading of streets and sidewalks with street trees.
- The buildings will incorporate roof design options including white/reflective materials, vegetated green roofs and/or "solar-ready" design for future installation of photovoltaic panels (PV's). Those preliminary studies are included at the end of this chapter.

### Open Space

The Northland Newton Development dedicates a significant portion of the site- 43% or 9.8 acres- to a rich and diverse network of new open spaces. Building at the density proposed will result in the ability to preserve more of the site area as open space for programmed parks, landscaped green spaces, a playground, bike and walking paths throughout.

- Through the extensive cleanup and ecological restoration of the brook and its banks, **South Meadow Brook Park** will become a natural green space with tree cover and rich vegetation. It will provide public access and enjoyment of this portion of the South Meadow Brook for the first time in decades. South Meadow Brook Park also includes a dedicated dog park area.
- **The Mobility Plaza** adjacent to the Mobility Center includes areas of seating with tables shaded by clusters of trees to provide an enjoyable outdoor spot while waiting for the transit shuttles or just enjoying coffee or lunch.
- The **Laneways** provide a pedestrian-oriented hardscaped east-west connection through the site between the Mobility Plaza and the new community building and adjacent playground. Wide walkways and protected courtyard spaces with seating and tree cover provide rich diversity to the types of open space on the site.
- **Mill Park** embraces the historic nature of the site by displaying repurposed cultural and architectural artifacts as newfound sculptures. It provides a safe pedestrian pathway connection from Needham Street to the new Village Green and through to Oak Street Park.
- **The Village Green** is the jewel of the project's open space network. 1.3 acres of open/green space at the center of the site will host a variety of uses such as frisbee and ball-playing, picnicking or just

reading and lounging in the sun. The space will also be actively programmed to host community events such as a farmers' market, temporary ice skating rink and other community-oriented festivals and activities.

- **Oak Street Park** provides a tree-lined landscaped sidewalk edge and encourages pedestrian access from Oak Street up through the park to the Village Green.
- A new **Community Playground** adjacent to the Greenway and the new community building provides several new spaces for the residents and surrounding community to play. Current research has found that intentionally designed natural playscapes promote early childhood development better than more traditional play structures<sup>9</sup>. The Community Playground will incorporate several different areas of creative natural playscape elements encouraging children to climb, explore and use their imaginations.

### **Roof Mapping**

A preliminary roof mapping exercise was completed for the new buildings and the existing historic Saco-Pettee mill building. The purpose of the exercise is to study the roof areas that may be available after the placement of mechanical equipment and other required items on the roofs and to weigh the opportunities for planted green roof areas, solar ready roof areas and active rooftop terrace amenity areas. Preliminary roof mapping diagrams are included in Figure 1 at the end of this chapter. The diagrams are still conceptual and subject to the requirements of final design.

### **Alternative Transportation**

According to the U.S. Energy Information Administration (EIA), transportation emissions contributed 37% of the total greenhouse gas emissions in the U.S. in 2017.<sup>10</sup> There are many transportation-related strategies that the Northland Newton Development is integrating in line with the goal of reducing single-occupancy vehicles and vehicular traffic on the site and in the surrounding area. The benefits of providing alternatives include improved local air quality, reduced CO2 emissions for mitigating climate change, encouraging exercise and healthy living, and preserving open space by reducing the parking areas provided. The project is incorporating the following strategies:

- Creating pedestrian and bike connections to the Newton Upper Falls Greenway, Upper Falls village center, surrounding neighborhoods, and adjacent bus stops.
- A new Mobility Hub provides both resident and public access to a range of alternative transit options. The Hub will host shuttle service to several T stops and commuter rail stops and serve as a welcoming gathering place for shuttle and MBTA riders.
- On-site electric car charging stations are provided for the public and residents.
- Vehicle and bike sharing programs will be incorporated on site.

### **Community Livability**

The 'people' part of the sustainable development equation is an important driver for making the project an integrated part of the community fabric and for creating new places that will benefit all who interact with them. Existing residents of the surrounding neighborhoods, new residents of the development, employees of the new businesses, and customers of the new retail stores and restaurants will all appreciate and enjoy the care put into making the Northland Newton Development a livable and vibrant part of the community.

---

<sup>9</sup> Lisa P. Kuh, Iris Ponte, & Clement Chau. (2013). The Impact of a Natural Playscape Installation on Young Children's Play Behaviors. *Children, Youth and Environments*, 23(2), 49-77.

<sup>10</sup> [www.eia.gov/energyexplained/index.php?page=environment\\_where\\_ghg\\_come\\_from](http://www.eia.gov/energyexplained/index.php?page=environment_where_ghg_come_from)

New affordable housing units will provide for economic access and increased community diversity. A significant number of 'all age friendly housing' units in the project will incorporate Universal Design Standards making them accessible to all members of the community. Intergenerational equity and the inclusion of all ages in the development aligns with the core tenets of sustainability.

### **Health and Wellness**

Sustainable design has seen a recent shift towards a greater focus on the importance of health and wellness for the people both building and occupying the spaces we create. The LEED for Neighborhood Development Rating System promotes this in many capacities which will be important components of the Northland Newton Development. Mixed-use, compact developments inherently promote physical activity through walkability, and in addition, this project will create retail, restaurants and office space within walking/biking distance of existing neighborhoods. Safe, well-lit outdoor spaces and paths will be provided as well as connections to existing regional bike trails, providing opportunities for outdoor recreation and exercise for all ages.

The buildings will also be designed to create healthy indoor spaces for living and working. Specifying low-VOC and non-toxic building materials, finishes and paints contribute to cleaner indoor air quality. Access to fresh air with the use of operable windows will be utilized when appropriate, and daylighting of the interior spaces will be part of the inherent project design criteria.

### **Climate Change Resiliency**

Designing for resiliency to climate change has rapidly become a topic of importance in the real estate and development sector. It is clearly a topic of high priority to the City of Newton as made evident by the detailed section on the topic in the Needham Street Area Vision Plan. Some strategies to address and mitigate climate change on the urban design level have already been addressed in this chapter.

The project must comply with the Massachusetts Environmental Policy Act (MEPA) Greenhouse Gas Emissions Policy and Protocol<sup>11</sup>. The Policy requires that projects quantify carbon dioxide (CO<sub>2</sub>) emissions and identify measures to avoid, minimize, or mitigate such emissions. The analysis will quantify the direct and indirect CO<sub>2</sub> emissions associated with the project's energy use (stationary sources) and transportation-related emissions (mobile sources).

The Northland Newton Development is already incorporating many of the CO<sub>2</sub> mitigation measures suggested in the MEPA Greenhouse Gas Emissions Policy and Protocol. The following suggested measures are an abbreviated list of items already included in the project-

- Minimize building footprints
- Design project to support alternative transportation to site including transit, walking and bicycling
- Develop or support multi-use paths to and through the site
- Improve building envelopes
- Use high-albedo roofing materials to reduce heat absorption
- Design roofs to be solar-ready
- Construct green roofs to reduce heat load on roof, further insulate, and retain/filter rainwater
- Install high-efficiency HVAC systems and high-efficiency lighting
- Install Energy Star rated appliances
- Install efficient water fixtures that exceed building code requirements

---

<sup>11</sup> [www.mass.gov/orgs/massachusetts-environmental-policy-act-office](http://www.mass.gov/orgs/massachusetts-environmental-policy-act-office)

- Collect and re-use rainwater for landscaping
- Design for waste reduction in building design
- Implement a construction waste management plan
- Incentivize use of public transportation
- Pursue opportunities to minimize parking supply

Reduced energy consumption across all of these measures results in reduced consumption of fossil fuels and thereby reduces the carbon footprint of the project's construction and ongoing operations.

### **Building Energy Efficiency**

As mentioned above, all of the new buildings in the project will meet strict standards for energy efficiency. The Needham Street Area Vision Plan states a goal for new projects to target net-zero energy use. Net zero is still a very challenging bar to meet for large-scale commercial buildings in an urban environment, but the Northland Newton Development is committed to pursuing energy efficient construction methods and systems in order to reduce energy and electricity use by the buildings. As the project enters the more focused and detailed design phases, additional energy efficiency strategies and standards will be explored for feasibility and viability, including net zero energy and Passive House Institute US (PHIUS).

At a minimum, all new buildings on the site will be designed to be LEED Certifiable under LEED for Building Design and Construction (BD+C) v3. All buildings will be required to meet the Massachusetts Stretch Energy Code<sup>12</sup> as adopted by the City of Newton. The Stretch Code requires that buildings be 10% more energy efficient than the currently adopted International Energy Conservation Code (IECC) 2015, making it a more stringent energy standard than even LEED currently is. The design of the new buildings on the site will strive for a higher energy efficiency threshold than the Stretch Code.

Further investigation and research during schematic design will take place to weigh options for increasing energy use reductions. At a minimum, the buildings will include the following-

- High-efficiency heating, ventilation and air conditioning (HVAC) and domestic hot water systems
- High-efficiency LED smart lighting systems and fixtures
- EnergyStar appliances throughout.
- Window and glazing/glass selection will reduce energy required by HVAC systems
- Energy modeling of each building will be required to demonstrate performance and tangible energy use and cost savings.
- High-performance building envelope systems/materials.
- Building system commissioning will be performed to ensure all systems are operating as designed.

### **Building Water Efficiency**

The use of LEED as a framework will also require meeting water efficiency thresholds for water use inside the buildings and all new buildings will target a minimum water use efficiency of 30% over the Energy Policy Act LEED v3 water use baseline.

Some of the water efficiency strategies will include the following-

- Low-flow plumbing fixtures that comply with, or exceed, the EPA WaterSense standards

---

<sup>12</sup> The Stretch Energy Code refers to the 9<sup>th</sup> Edition of the Massachusetts State Building Code 780 with the Stretch Energy Code Amendment 780 CMR 115 AA.

- Water use calculations will be required to demonstrate performance and tangible water quantity savings.

#### **Durability of Building Materials**

High quality and long-lasting building materials and finishes will be selected to ensure that the buildings are both beautiful and sustainable for the long-term. Durable materials require less maintenance and don't need to be replaced as often, which allows for a longer material life and inherent sustainability.

#### **Waste Management**

In an article by the National Trust for Historic Preservation in 2012, the author coined the phrase, "the greenest building is the one that's already built"<sup>13</sup> and launched a movement to integrate historic preservation and sustainability. The preservation of the historic Saco-Petee mill building provides many environmental benefits including the reduction of landfill waste from demolition as well as the avoidance of new materials and construction waste that would be generated by replacing it. During construction, the waste materials for all buildings will be sorted and recycled in order to divert as much of the construction waste as possible from landfills, with a minimum goal of 75% construction waste diversion. Once occupied, the buildings will have recycling programs in place for the residents and businesses consistent with, or better than the LEED requirements for collecting recyclables.

#### **Public and Tenant Education Programs**

The Northland Newton Development will embrace and demonstrate so many ideas and technologies under the umbrella of sustainable design that it can serve as a wonderful educational opportunity. Site signage will be used to provide education to the public on the environmental strategies including the stream restoration, rainwater management strategies, and LEED-ND signage explaining what LEED is and how the project meets certain credits. The preservation of a historic building and reuse of elements from the industrial history on the site will preserve those cultural assets and provide public education about the history and context of place. A residential tenant education program could be implemented to explain the operations of the building systems, the benefits of the green materials and resulting healthy indoor air quality, as well as tout the energy and water savings of the apartment units and buildings.

#### **Comprehensive Sustainability Vision**

The sustainability goals and strategies of the Northland Newton Development, further illustrated in Figure 2 at the end of this chapter, mirror the overall vision as well as many of the short and long term goals set forth in the Needham Street Area Vision Plan 2018. The project will align with specific desired strategies in all of the Vision Plan categories including environmental health, transportation, land use, and design and will act as a demonstration of innovative and sustainable design aligned with the goals for future growth in the City of Newton and the community.

---

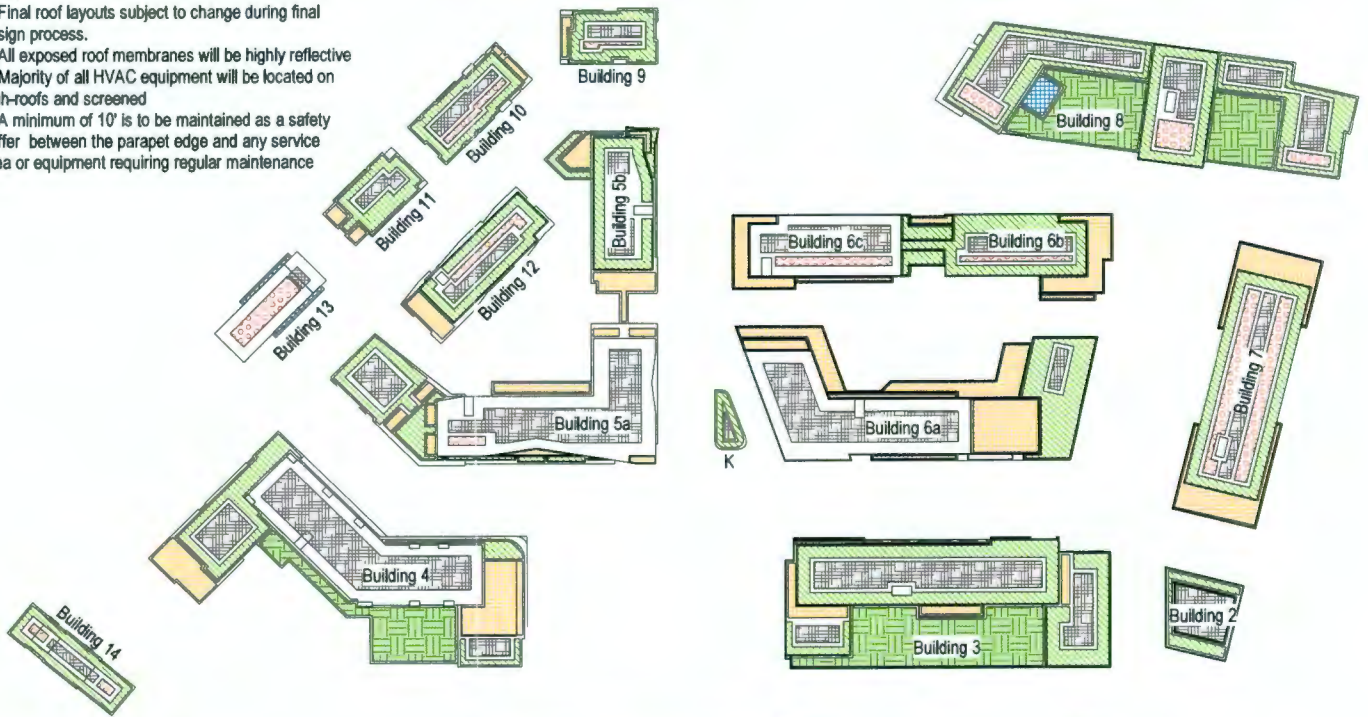
<sup>13</sup> Elefante, C. (2012). The Greenest Building Is. One That Is Already Built. *Forum Journal* 27(1), 62-72. National Trust for Historic Preservation.



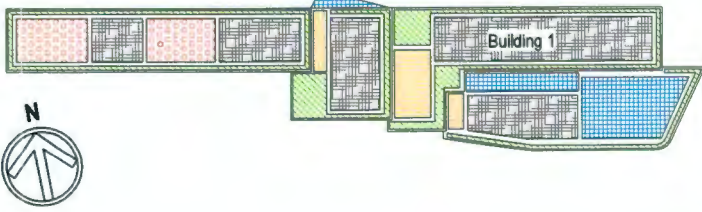
Figure 1: Preliminary / Conceptual Roof Mapping Diagram

NOTES:

1. Final roof layouts subject to change during final design process.
2. All exposed roof membranes will be highly reflective
3. Majority of all HVAC equipment will be located on high-roofs and screened
4. A minimum of 10' is to be maintained as a safety buffer between the parapet edge and any service area or equipment requiring regular maintenance



Conceptual Roof Mapping Legend	
	Potential Sedum Green Roof
	Potential Active Green Roof Amenity
	Potential Amenity Roof Deck / Private Terrace
	Anticipated Rooftop Equipment Zones
	Potential Skylights
	Potential Solar Ready Roof Areas



**Northland Newton Development**  
**Figure 2: Sustainable Strategies Plan**

