



# Hälsa

hälsa  
230 ROYAL YORK

One Planet Living® leadership review  
January 2024



One Planet  
Living®

hälsa

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# Report overview

# Report overview

## Project name:

Hälsa

## Project type:

Real estate

## Developer:

Hälsa is a joint venture between Windmill Developments and Leader Lane Developments (noted as “Windmill” going forward).

## Description:

Hälsa will comprise of three residential buildings in Etobicoke’s Mimico neighbourhood of Toronto. The buildings are located at 230 Royal York, 430 Royal York and 722 The Queensway, all within 10 minutes’ walk of each other.

The project will consist of two six-storey and one eight-storey residential building, totalling 83 homes.

Hälsa is part of the [One Planet Living Real Estate Fund](#) portfolio.

## Reviewer:

Nicole Lazarus

## Sign-off and quality review:

Ronan Leyden

## Date of review:

January 2024



## Leadership status:



One Planet  
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Global  
Leader 2024

# Bioregional and One Planet Living

# Bioregional and One Planet Living

## About Bioregional

Bioregional is a purpose-led sustainability consultancy. It has worked in over 20 countries on sustainable development, working with local communities, cities, and companies.

Bioregional devised the One Planet Living framework in 2003 with WWF, based on our experiences creating the multi-award-winning BedZED in South London, the UK's first large-scale sustainable community. One Planet Living has guided the development of real estate across the world, shaping exemplar communities that enable sustainable living.



## About One Planet Living

One Planet Living is our vision of a world where everyone can live happily and healthily within the limits of our planet's resources while leaving space for nature to thrive.

We need this vision because if everyone lived like the average Canadian, we would need nearly five planets to support us. The measure of this is called 'ecological footprinting'. Meanwhile, many lack what they need for a good life, and wildlife is being pushed out to make room for our demands.

The One Planet Living framework consists of 10 principles which cover the activities that drive resource consumption, and the elements that form the basis of a good life for everyone. The principles are used to identify the needs in a local area, to relate these to the planetary bottom-line, and then to structure responses to those needs.

-  Health and happiness
-  Equity and local economy
-  Culture and community
-  Land and nature
-  Sustainable water
-  Local and sustainable food
-  Travel and transport
-  Materials and products
-  Zero waste
-  Zero carbon energy



# What is a One Planet Living leadership review?

# What is a One Planet Living leadership review?

**A review is when you open your action plan to scrutiny from a suitable qualified expert from Bioregional (or one appointed by us). It will include:**

- Reviewing the action plan as a whole and providing advice and suggestions on how it might be improved
- Evaluating it against several criteria including impact, systems change, ambition and delivery
- Assessing the action plan against the One Planet Living goals and guidance and local industry best practice.
- You can then discuss whether your action plan could be a candidate for leadership recognition.





# About this leadership review

# About this leadership review

## This document reviews the Hälsa Preliminary One Planet Living (OPL) action plan along with supplementary documents including:

- Design and Contractor Guidelines,
- Windmill Impact Standard Dashboard,
- Windmill's One Planet Living Carbon Specification.

Windmill has established an OPL Lifestyles working group to identify a strategy to provide post-occupancy support for all developments in the One Planet Living Fund portfolio, including Hälsa. The work of this group is underway with a strategy anticipated in early 2024, followed by the development of resources to encourage more sustainable behaviour. It is expected that the strategy will include:

- the use of a website or resident portal to provide information for all incoming residents,
- plans for incorporating OPL approaches into the governance arrangements of each scheme where possible, i.e., through the future Condo Board,
- incentives such as introductory subscriptions to sustainable food providers, mobility providers, and / or public transport passes,
- plans for post-occupancy monitoring and resident surveys,
- an eco-concierge service to support active engagement with residents.

Also under development is a Community Benefits package for Hälsa, due for completion during 2024 and expected to identify:

- appropriate equity-seeking groups and how the scheme will deliver benefits to them,
- measures to embody indigenous wisdom and oral history into the project,
- economic and cultural development opportunities for targeted equity-seeking groups,
- jobs targets.

For the purposes of this review, details of the OPL Lifestyle and Community Benefits packages are listed as opportunities for future editions of the OPAP.

# Review summary and highlights

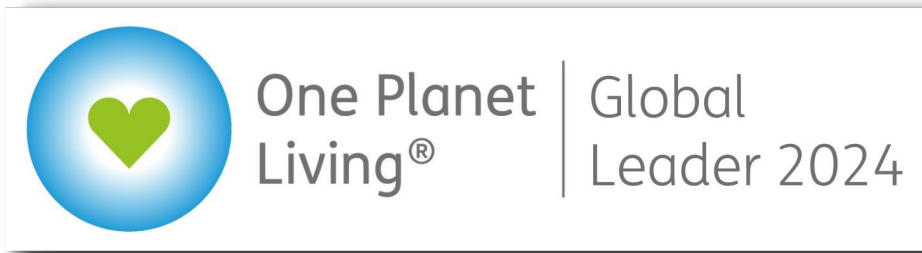
# Review summary

When built, Hälsa will be the first One Planet Living community in Toronto. It will also deliver the first timber frame mid-rise buildings in Toronto, breaking new ground for reducing embodied carbon impacts. The ambitions in the action plan are comprehensive, with robust KPIs across all 10 principles.

As part of the One Planet Living Fund portfolio, Hälsa is part of a process to make aspirational One Planet Living a standard and consistent way of delivering communities.

Design stage and construction stage measures are well addressed in the documents provided. The upcoming OPL Lifestyles and Community Benefit support packages will be important next steps in the coming year.

**The outcome of this review is to recognise Hälsa as a One Planet Living Global Leader 2024.**



For ongoing Global leadership recognition for 2025 and beyond, the following measures will be important:

- delivery of the OPL Lifestyle strategy and Community Benefits package due to be launched next year

- an updated published action plan (see Implementation section below)
- targeted, locally specific biodiversity benefits incorporated into the detailed landscape design.



# Project highlights

1. Hälsa is in an excellent location, contributing to high density urban renewal, with superb transit and active travel provision.
2. Hälsa will pioneer the use of cross-laminated timber (CLT) in mid-rise construction in Toronto. Windmill is partnering with innovative suppliers offering a prefabricated mass timber build system that will radically reduce construction time and upfront embodied carbon, targeting <math><250\text{kgCO}\_2/\text{m}^2</math>.
3. By using the same construction system and design blueprint for all three buildings, Windmill will also accelerate the approvals process and construction timelines. This will improve the business case for these high performance, low embodied carbon specifications and providing a model that can be replicated for future projects.
4. Hälsa will offer residents great quality of life features including thermal comfort, exposed wood surfaces and use of high-quality outdoor roof and balcony spaces.
5. Despite the high density, Hälsa will provide 25% nature friendly landscaping space on all three sites, with best practice in native planting, bird-safe design, and non-toxic pest control.
6. Hälsa is designed to achieve LEED Platinum and Toronto Green Standard Version 4, Tier 2. Hälsa will be net-zero carbon with no combustion on site, excellent building fabric, geothermal energy supply and excellent water efficiency measures.
7. As single block schemes, Windmill will have no ongoing presence at the Hälsa buildings, so post-occupancy engagement and performance tracking present challenges. Despite this, and recognising the importance of these whole life considerations, Windmill is addressing them at a group-wide level, with an intention to develop:
  - a. A Community Benefits plan to identify specific areas of need, gaps in local service provision, and how equity-seeking groups could benefit from the project,
  - b. OPL lifestyles package,
  - c. A post-occupancy monitoring plan and resident survey monitoring for energy and water, travel habits and possibly greenhouse gas (GHG) savings due to more plant-based diets. The length of this engagement is under consideration, and may differ between rental and condo, where the opportunities for monitoring may be limited to one year.

When these measures are in place, and if post-occupancy monitoring can be extended beyond one year, this will demonstrate exemplary post-occupancy commitment for schemes of this scale.

# Suggestions

**As well as item 7 on the previous page, we have a few further suggestions for Hälsa:**

1. Use of local ecological guidance to inform the detailed landscape design, to identify specific local species in need of a habitat boost and to inform the choice of trees, green roof types and plants.
2. Due to climate change, all locations are expected to face an increase in extreme weather events, from thermal extremes to storms and flooding events. It is not clear from the information provided that Hälsa has been designed and modelled using weather data from these extreme but increasingly likely forecasts. There is an opportunity for this during detailed design.
3. Details of how the small quantity of residual carbon emissions will be offset to fully achieve the net-zero carbon ambition. This could be through a local photovoltaic (PV) or retrofit project, perhaps enhancing the Community Benefits package e.g., PV panels on a local school or social housing scheme.
4. Resident surveys should include questions on travel modes to understand how effective the measures have been and ideally to assess modal share.
5. There is an opportunity for Windmill and its appointed contractor to identify health and wellbeing measures for construction staff beyond good indoor air quality.







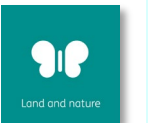

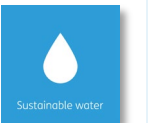



# Action plan summary

# Action plan summary

Bioregional uses a simple red/amber/green traffic-light approach to indicate how well the action plan addresses the One Planet Living principle and their goals. More detailed comments and recommendations are in the 'detailed review' section.

- 5 Well addressed
- 4 Well addressed but additional suggestions provided
- 3 Partly addressed but additional content needed
- 2 Not adequately addressed
- 1 Not addressed







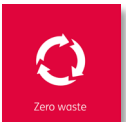



|  | Comment   | RAG rating  |
|--|---|---|
|    | <p>Well-structured resident surveys for at least one year comparing health and wellbeing indicators with local baselines. Active travel provision is excellent. Thermal comfort, healthy materials, and exposed timber surfaces. Use of private and shared outdoor spaces.</p>  |    |
|    | <p>Innovative supply chain partnership to provide speedier approvals and efficient build processes, unlocking sites for densification. Community Benefits Plan and OPL Lifestyles package are currently under development. No affordable housing is provided on this scheme though.</p>   |    |
|    | <p>The outcomes in the action plan express excellent ambitions, particularly around embodying indigenous wisdom and oral history into the project. Community Benefits and OPL Lifestyles packages are currently under development to deliver those ambitions.</p>   |    |
|   | <p>Hälsa's land use credentials are excellent. The design uses lots of best practice details such as bird-safe design, native species, dark sky compliance, heat island reductions and non-toxic pest control. Hälsa will have 25% nature-friendly landscaped outdoor space. Every dwelling will have unobstructed, quality views outdoors.</p> |   |
|  | <p>Excellent water efficient specification with zero mains water for irrigation. Stormwater runoff to be reduced by half. There is an intention to monitor site-wide water use, but residents do not have the benefit of individual water meters.</p>   |  |



# Action plan summary

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|  | Comment   | RAG rating  |
|--|---|---|
|    | <p>Each dwelling in these six- and eight-storey condos has an option to use food growing space on the roof. Space is provided for box scheme deliveries and segregated organic waste collection. The action plan also aims to track GHG savings due to more plant-based diets using post-occupancy surveys.</p>   |    |
|    | <p>Excellent location for minimising car dependency, with convenient access to bus, train, active travel routes, and most retail and service needs. Car parking &lt;0.5 spaces per dwelling with ample EV charging. Walkscore ratings of 66-77 and cycling scores of 68-84. There is a bike maintenance area with communal tools, a bike wash facility and electric bike charging.</p>  |    |
|    | <p>Hälsa will pioneer the first prefabricated CLT mid-rise projects in Toronto, reducing upfront embodied carbon to below 250kgCO<sub>2</sub>/m<sup>2</sup>. Specifications include local sourcing, responsible extraction, and environmental product declarations. The OPL Lifestyle package will encourage low impact resident consumption habits.</p>  |    |
|   | <p>Targeting &gt;90% construction and demolition waste diversion. Design includes space for communal recycling and bulky waste item collection areas, special collection areas e.g., batteries, and waste segregation in each dwelling. Windmill is currently developing a methodology for monitoring resident waste.</p>   |   |
|  | <p>Hälsa has good building fabric specification with Thermal Energy Demand Intensity (TEDI) target &lt;30kWh/m<sup>2</sup>. Space heating and cooling are met using ground source heat pumps. Energy use intensity is modelled at 69kWh/m<sup>2</sup>. Windmill envisages post-occupancy energy monitoring for at least one year. Clean grid electricity results in a small residual GHG intensity of 2.5kgCO<sub>2</sub>/m<sup>2</sup>, to be offset in line with Canada Green Building Council (CaGBC) standards.</p> |  |

# Overall leadership qualities

# Overall leadership qualities

|                       | Highlights  | Opportunities  |
|-----------------------|---|--|
| <b>Scope</b>          | <p>The action plan addresses, or has work in progress to address, all 10 principles. It considers all the direct impacts and opportunities associated with delivering the development and most indirect impacts.</p> <p>The plan targets design, construction, operation and, where possible, future resident behaviour, and even marketing/sales processes.</p> <p>The action plan contains an excellent context analysis which sets the scene for all of the proposed strategies.</p> | <p>The scope of the Lifestyle and Community Benefits package is yet to be reviewed.</p> <p>Bioregional encourages the team to creatively find ways to maintain a relationship with each condo board and to track the success of the scheme beyond one year of occupation, for a minimum of five years. This will provide precious learning to inform future One Planet Living Fund schemes as well as the wider industry.</p> <p>Windmill will be addressing this through its OPL Lifestyle strategy and, more specifically, a metering strategy that will endeavour to work with each condo board to collect data, pending the legalities in doing so.</p> <p>It is not clear if the team have used future weather data to model for the impacts of future climate scenarios.</p> |
| <b>Transformation</b> | <p>The Hälsa project shows industry leadership in many ways. It is the first OPL community in Toronto and the first application of CLT for mid-rise developments in Toronto.</p> <p>Hälsa has an impressive approach to standardising high performance One Planet Living solutions for all future developments in the One Planet Living Fund.</p>   | <p>The Hälsa project, and specifically its focus on mass timber, will test a new innovative approach to building mid-rise homes on narrow city infill lots in a more responsible manner. In doing so, the cost of developing these infill lots should be reduced, transforming the number of homes that can be built on otherwise underutilized sites.</p> <p>The upcoming OPL Lifestyle package has the exciting potential to show innovative leadership in post-occupancy follow up for schemes with no onsite developer presence after one year.</p>  |

# Overall leadership qualities

|                | Highlights  | Opportunities   |
|----------------|---|---|
| Ambition       | <p>The outcomes are comprehensive, and their level of ambition aligns with the goals in the OPL framework. The outcomes are particularly well crafted for the context, with topic areas to illuminate the intentions of the outcomes. Each outcome is accompanied by at least one indicator with ambitious targets set. Hälsa is designed to meet LEED Platinum and Toronto Green Standard (TGS) v4 Tier 2.</p> |   |
| Implementation |   | <p>As discussed, the final published version of the action plan will have project-specific actions and strategies for each outcome, described in one place with project specific indicators and targets for each outcome.</p> |

# Detailed review



Health and happiness

### Outcomes:

- Residents are among the most physically active in Canada
- Residents are among the happiest in Canada
- Indoor and outdoor spaces are healthy, welcoming and comfortable

| Topic  | Highlights  | Opportunities   |
|--|---|---|
| <b>Physical health</b><br><br><b>Happiness and wellbeing</b> | <p>Post-occupancy resident surveys will ask standardised questions on self-reported health and happiness. The project aspires to score much better than the Toronto baseline.</p> <p>The project provides excellent active travel provisions (See Travel and transport below).</p> <p>The resident survey will ask about residents’ physical activity and aspires to a 20% improvement on the Toronto baseline of 150 minutes-per-week.</p> <p>The project will make use of biophilic design principles by featuring exposed wood surfaces.</p> <p>The project specifies 100% low volatile organic compound (VOC) building products.</p> <p>To maintain thermal comfort, the buildings are designed to remain below 26°C in summer conditions. Passive features that will help achieve this include a Passive House standard building envelope, a window to wall ratio of &lt;30%, and thermally efficient glazing. Active cooling will then be provided from the ground source heat pump system.</p> | <p>It is not clear if weather data from future climate scenarios has been used in the modelling for thermal comfort.</p> <p>No external shading options are mentioned.</p> <p>It is not clear what daylighting standards have been applied or whether daylight modelling has been carried out.</p> <p>Identify more health and well-being measures for construction staff when contractors are appointed.</p> |

Continued overleaf

| Topic  | Highlights  | Opportunities |
|--|---|---------------|
| <p><b>Physical health</b></p> <p><b>Happiness and wellbeing</b><br/><i>(continued)</i></p> | <p>All dwellings will have private outdoor balconies or terraces. And all residents will have access to a shared rooftop terrace.</p> <p>In order to protect the health and wellbeing of construction workers, dust management, good ventilation and low emitting materials will ensure good construction stage indoor air quality.</p> |               |





Equity and  
local economy

## Outcomes:

- Affordable and accessible options are available to all
- Economic development opportunities are available to equity-seeking groups
- Residents and contractors engage in environmentally and socially responsible procurement practices

| Topic  | Highlights  | Opportunities  |
|--|---|--|
| <b>Diversity and equality of opportunity</b> | Hälsa will also include at least 15% accessible homes to meet the Ontario Building Code.  | No affordable homes are provided at Hälsa. There is currently no financial government support for them.<br><br>A group wide Community Benefits plan is currently being developed for Windmill. This will identify what equity-seeking groups will be targeted for Hälsa, what economic development opportunities will be made available and also jobs targets. The aim is to complete this plan during Q1 of 2024. |
| <b>Vibrant local economy</b>                 | The design allows for an expedited construction timeline. The three buildings will use the same design blueprint, accelerating the approvals process and creating a replicable model that may be repeated on future projects. This improves the business case for more projects of this standard in the region. | The OPL lifestyle package can promote local sustainable businesses and service providers.  |
| <b>Fair international trade</b>              |   | The OPL lifestyle package could potentially address this.  |





Culture and  
community

## Outcomes:

- There is a culture of sustainability that is rooted in indigenous traditional knowledge and wisdom
- The design embodies indigenous oral history to reveal its local narratives
- All residents feel a sense of belonging, regardless of physical ability, ethnic identity, age or economic means

| Topic  | Highlights   | Opportunities  |
|--|--|--|
| <b>Sense of place and belonging</b>                  | Hälsa will use human scale design and public art. It will include thoughtfully designed shared spaces for a range of activities, including a bike maintenance area and a shared terrace. |  |
| <b>Local culture and heritage</b>                    |  | <p>A group wide Community Benefits Plan is currently being developed for Windmill. The aim is complete this plan during Q1 of 2024.</p> <p>Outcome 2 ‘The design embodies indigenous oral history to reveal its local narratives’ is currently being considered.</p>   |
| <b>Active citizenship and sustainability culture</b> |  | <p>The OPL lifestyles package will embed a holistic culture of sustainability in these new communities, due to be launched in 2024.</p> <p>Outcome 1 ‘There is a culture of sustainability that is rooted in indigenous traditional knowledge and wisdom’ will also be addressed in the OPL Lifestyle package.</p> |



Land and nature

### Outcomes:

- The natural cycles and resource flows of the local ecosystems are respected and regenerated
- Connections to the surrounding natural beauty and landscape create a love of nature

| Topic  | Highlights  | Opportunities  |
|--|---|--|
| <p><b>Positive contribution to local biodiversity</b></p> <p><b>Enhance ecosystem services</b></p> | <p>The project’s land use credentials are excellent, redeveloping three urban sites, providing high quality environments for people whilst densifying an urban area. In doing so, the project will help to meet housing need without impacting natural areas elsewhere. The Hälsa project will provide 83 high quality homes in locations that previously had underused commercial/office space.</p> <p>Hälsa will incorporate lots of best practice details such as bird-safe design, dark sky compliance, heat island reductions and non-toxic pest control.</p> <p>All three Hälsa sites will feature 25% nature-friendly outdoor landscaping.</p> <p>All outdoor spaces will be planted with native or adapted species and are designed for use all year round.</p> <p>Every Hälsa dwelling will have unobstructed, quality views outdoors.</p> | <p>The biodiversity value of the outdoor amenity spaces is not yet obvious. Bioregional suggests using local ecology studies or a local ecologist to identify specific species to be supported through planting.</p> <p>The intention to design outdoor terraces for use in all seasons is very welcome. At this stage it is not clear what that entails. Any outdoor heating would, of course, not be aligned with OPL.</p> |
| <p><b>Engage people in the value of nature</b></p>   | <p>All three buildings will be located just short walking and cycling distances from excellent greenspaces, bodies of water and active travel routes to large parks. For example, Mimico Memorial Park and Hillside Park are around 500m away and Humber Bay Parks are just a five-minute bike ride or 25 minutes’ walk.</p> <p>Exposed timber ceilings and walls will demonstrate an aspect of biophilic design principles.</p>  |  |



Sustainable water

## Outcomes:

- The residents use less potable water
- Groundwater and surface water are protected

| Topic                             | Highlights  | Opportunities   |
|-----------------------------------|---|---|
| <b>Water efficiency</b>           | <p>Water efficiency measures are excellent, with low flow/flush fixtures and fittings. The project is targeting 98 litres per person per day mains water consumption, less than half the local baseline.</p> <p>Outdoor water needs will be minimised through native and adapted planting and minimal turf grass. No potable water will be used for irrigation.</p> | <p>The upcoming OPL Lifestyle pack could provide information on water saving behaviours and steps residents can take to prevent water pollution.</p> <p>Residents are not individually metered for water so unfortunately, this cannot be used to inform water efficient behaviour.</p> |
| <b>Surface water management</b>   | <p>Rainwater will be retained and stored in an underground cistern, for use in irrigation. This reduces stormwater runoff by half and reduces the flood risks for the site and the surrounding neighbourhood.</p> <p>The project follows Toronto’s Wet Weather Flow Management Guidelines to reduce the quantity and improve the quality of stormwater runoff.</p>  | <p>It is not clear if weather data from future climate scenarios has been used in designing for flood risk and extreme rainfall events.</p>   |
| <b>Runoff during construction</b> | <p>An Erosion and Sedimentation Control plan is specified.</p>  |   |



Local and sustainable food

### Outcomes:

- Residents and visitors have access to affordable, healthy, local food
- The carbon footprint associated with food is minimised
- Community spirit is fostered through food

| Topic  | Highlights  | Opportunities  |
|--|---|--|
| <p><b>Fresh, local, seasonal, healthy produce</b></p> <p><b>Diets high in vegetable protein</b></p> <p><b>Promote sustainable, humane farming</b></p> <p><b>Eliminate food waste</b></p> | <p>Hälsa is being designed to facilitate Community Supported Agriculture (CSA) pickups. Windmill is considering gifting each home with a one-year subscription to a local organic box scheme.</p> <p>Food growing opportunities will be provided on the roof terraces.</p> <p>There is an intention to track the GHG savings due to more plant-based diets using post-occupancy surveys.</p> <p>A municipal segregated organic waste collection service will be provided.</p> | <p>The upcoming OPL Lifestyle package could address sustainable food choices, reducing food waste and provide ideas for food-based community activities.</p> |



Travel and transport

## Outcomes:

- Low-carbon transportation options are the primary means of transport for residents
- Parking infrastructure is adaptable and flexible for future re-use and growth

| Topic   | Highlights   | Opportunities  |
|---|--|--|
| <p><b>Reduce car dependence and the need to travel</b></p> <p><b>Promote walking and cycling</b></p> <p><b>Promote car-sharing and public transport</b></p> | <p>All three buildings will be located just short walking and cycling distances from cultural, retail and entertainment facilities, as well as the big retail box stores. Greenspaces and the waterfront are nearby, and an active travel route runs along the Royal York Rd.</p> <p>The Hälsa sites are all strategically located a short walk from Mimico GO Station, just two stops, a 16-minute ride from Toronto’s central Union Station, with onward connections. Mimico Station is due for redevelopment and upgraded facilities in the near future.</p> <p>The Hälsa sites have Walkscore ratings of 66-77 and cycling scores of 68-84. The buildings will have ample well-designed secure cycle parking, both short and long term, with e-bike chargers. There will be a bike maintenance area with communal tools and a bike wash facility.</p> <p>Parking provision &lt;0.5 spaces per dwelling. Parking will be compact, using an underground car stacking system on one of the sites, saving on land and concrete for underground infrastructure.</p> <p>Contractors will have a voluntary requirement to reduce and track transport-related emissions.</p> | <p>Resident surveys should include questions on travel modes to understand how effective the measures have been and ideally to assess modal share.</p> |

Continued overleaf

| Topic  | Highlights   | Opportunities   |
|--|--|---|
| <p><b>Promote low/zero carbon vehicles</b></p>   | <p>100% of parking spaces will be EV ready, with 25% fitted with level 2 chargers. Space will be provided for other micro-mobility devices such as scooters.</p> |   |
| <p><b>Raise awareness of the impacts of, and promote alternatives to, air travel</b></p> |  | <p>The upcoming OPL Lifestyle package can educate on the impacts of flying and to provide resources so residents can consider alternatives.</p> |





## Outcomes:

- Embodied carbon is reduced
- Building materials are culturally appropriate and provide healthy indoor environment for all occupants
- Materials for building construction and operations are selected to minimise their lifecycle impact

| Topic  | Highlights   | Opportunities   |
|--|--|---|
| <b>Reduce consumption of materials and products</b>      | <p>Car stacking for parking at one of the three sites has reduced the quantity of concrete required for underground infrastructure.</p> <p>Durability of building components is maximised through good practice moisture control.</p>  | <p>The upcoming OPL lifestyles package could highlight the impacts of material consumption habits and promote alternatives.</p>                           |
| <b>Choose materials and products with minimum impact</b> | <p>The three buildings are set to be among the first prefabricated, timber construction mid-rise projects in Toronto. Specifically, the buildings will be constructed with local cross laminated timber, allowing for much reduced steel or concrete use, and lower embodied carbon.</p> <p>The LEED-based design specification targets include:</p> <ul style="list-style-type: none"> <li>• embodied carbon of &lt;math&gt;&lt;250\text{kgCO}_2/\text{m}^2&lt;/math&gt;,</li> <li>• local material where possible,</li> <li>• 25% responsible extraction criteria,</li> <li>• 20 products with environmental product declarations,</li> <li>• Preliminary analysis has indicated an embodied carbon intensity of 210 <math>\text{kgCO}_2/\text{m}^2</math>,</li> </ul> | <p>The project team intend to include a survey question on whether residents purchase sustainable products, targeting 75%. This will raise awareness.</p> |

Continued overleaf

| Topic   | Highlights  | Opportunities |
|---|---|---------------|
| <p><b>Nontoxic materials and products</b></p> | <p>The design specifies zero added urea formaldehyde.</p> |               |







Zero waste

## Outcomes:

- Residents generate less waste
- The construction process generates less waste
- A sharing culture is developed and supported by residents

| Topic   | Highlights   | Opportunities   |
|---|--|---|
| <p><b>Reduce wasteful consumption</b></p> <p><b>Upcycling, reuse and recycling</b></p> <p><b>Zero waste to landfill</b></p> | <p>The outcomes are good, covering both construction and occupation phase. They include the sharing culture and a topic area for circular economy.</p> <p>Targeting &gt;90% construction and demolition waste diversion, with a construction and demolition waste management plan.</p> <p>Actions include:</p> <ul style="list-style-type: none"> <li>• designing for communal recycling and bulky waste item collection areas,</li> <li>• additional storage and collection arrangements for batteries, mercury-containing lamps or electronic waste,</li> <li>• suitable waste segregation facilities in each dwelling.</li> </ul> <p>Windmill intends to establish a partnership with a local organisation to collect items for donation.</p> | <p>Due to space constraints, no provision was made during demolition stage for sorting and collection of materials for reuse.</p> <p>Windmill intends to set targets for resident waste per person per year. The team are currently developing a methodology for tracking this KPI.</p> <p>The action plan doesn't currently mention encouraging a culture of upcycling and reuse, avoiding wasteful consumption. This is an opportunity for the upcoming OPL Lifestyles package.</p> |



**Outcomes:**

- There are zero operational greenhouse gas emissions
- Renewable energy is generated on-site
- Building occupants enjoy superior indoor thermal comfort year-round

| Topic  | Highlights   | Opportunities |
|--|--|---------------|
| <p><b>Energy efficient buildings</b></p> <p><b>100% renewable energy</b></p> | <p>The project is targeting zero carbon and will be combustion free in operation.</p> <p>The project targets LEED Platinum and Toronto Green Standard Tier 2. As such, measures include air tightness testing, tracking of energy and water consumption, a commissioning plan, smart metering and future climate resiliency planning.</p> <p>Limits have been set on Global Warming Potential (GWP) and Ozone Depletion Potential (ODP).</p> <p>The project will use geothermal energy via ground source heat pumps for space heating and for cooling. Domestic hot water will be electrically heated.</p> <p>Specifications include:</p> <p>TEDI target &lt;30kWh/m<sup>2</sup>/yr</p> <p>GHGI target &lt;10kgCO<sub>2</sub>/m<sup>2</sup></p> <p>Heat pump coefficients of performance 3.2 (heat) and 4.1 (cooling).</p> |               |

Continued overleaf

| Topic   | Highlights  | Opportunities |
|---|---|---------------|
| <b>Energy efficient buildings</b><br><br><b>100% renewable energy (continued)</b> | <p>Design stage energy modelling forecasts total electrical demand 280,000 kWh/yr, with an Energy Use Intensity of 69 kWh/m<sup>2</sup></p> <p>This electrical demand will be supplied by Toronto Hydro, generated almost entirely from hydro, nuclear and renewables with gas used for peak loads. Its carbon intensity is very low at ~33gCO<sub>2</sub>/kWh and will result in emissions of around 8,500 kgCO<sub>2</sub>/yr. This is equivalent to around 100kgCO<sub>2</sub>/yr per dwelling and exceeds the GHG intensity target at just 2.5kgCO<sub>2</sub>/m<sup>2</sup>.</p> <p>These residual carbon emissions will be offset in compliance with the CaGBC and OPL Zero Carbon Standards.</p> |               |



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