

Preston Pathways

4 // Transit-Oriented Housing — Academic Work



Course: ARCH 392

Location: Preston, ON

Date: January – April 2023

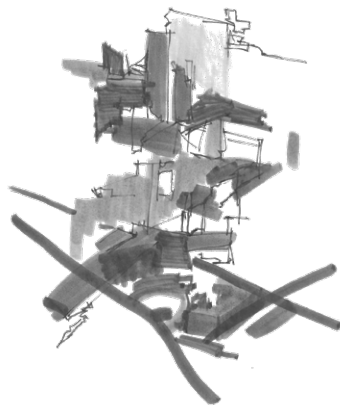
Role: Design development, digital modelling, visualization, physical model making, landscape design

Collaborators: Andrew McDonald

Instructor: David Fortin

Software: Rhino, Lumion, Photoshop, Illustrator

Exhibitions: Riverside Projects Review 2023, Commuting Communities Exhibition 2023



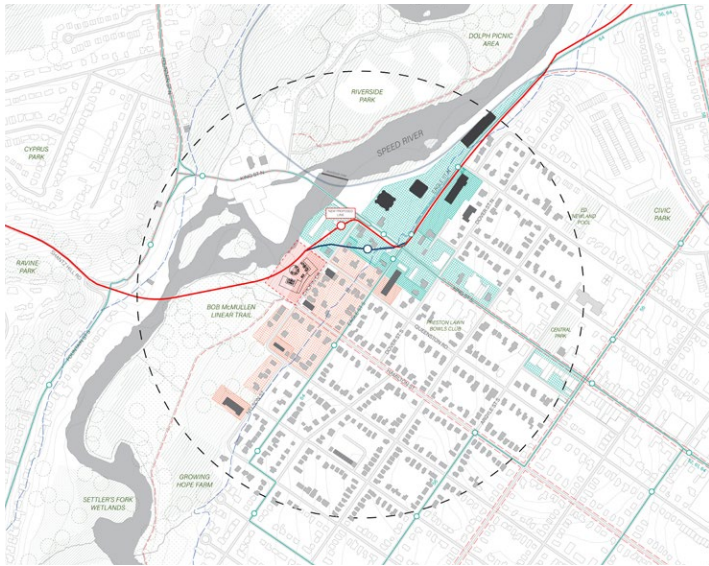
Preston ION Context

An early exploded axonometric study investigating the landscape as a layered system. Ground conditions, transit corridors, and spatial thresholds are separated and reassembled to understand relationships between open space, and the evolving ION-driven urban fabric of the Waterloo–Kitchener–Cambridge region.

How can architectural design promote equity, inclusion, and the integration of new immigrants while fostering self-sustaining communities and reducing long commutes?

The proposed architectural strategy for Preston focuses on promoting equity, inclusion, and transit-oriented densification along the ION line as a means of integrating new immigrants into Canadian society. The project organizes education centers, employment opportunities, and recreational spaces within the lower levels of the building, leveraging proximity to regional transit to establish accessible, community-oriented programs at the public interface. A central objective is the formation of a self-sustaining community, supported through river-connected gardens that operate as productive landscapes. These spaces generate both social value and economic opportunity, reinforcing local employment while strengthening the relationship between the building, its residents, the ION corridor, and the surrounding environment.

Additionally, incorporating education centers and employment opportunities within the community reduces daily commuting and supports a more localized, accessible lifestyle. Recreational spaces foster social cohesion by providing shared environments for interaction, learning, and collective activity. The strategy aims to welcome new immigrants, promote long-term sustainability, and empower residents by integrating essential amenities directly into the built environment. By aligning social infrastructure with housing and public space, the project creates a resilient, prosperous, and self-sustaining community that supports both integration and long-term stability.

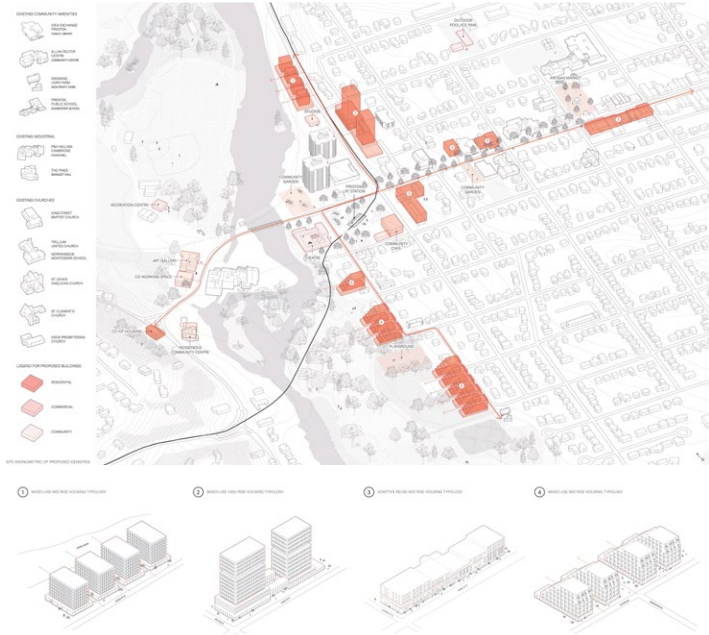


Site-Transit Plan

Preston Pathways' architectural design emphasizes natural sunlight, with buildings oriented to follow the sun's path across the site and adjacent transit corridors. This arrangement ensures each unit receives consistent daylight throughout the day and across seasons, improving interior comfort while reducing reliance on artificial lighting. By organizing massing and spacing around solar access, the project supports a bright, energy-efficient living environment that responds to local climatic conditions and movement along the ION line. Rooftop solar panels further reinforce this approach by harnessing renewable energy on-site and reducing the project's long-term environmental impact through passive and active performance.

At the neighborhood scale, this attention to performance extends into daily life and collective use. Pedestrian pathways, transit connections, and shared outdoor spaces link housing, community programs, and amenities, establishing a walkable framework structured around access to the ION corridor. By aligning higher densities with transit access and public corridors, Preston Pathways frames sustainability as a spatial condition shaped by movement, proximity, and shared experience.

Transit-Oriented Site Strategy



Landscape, Structure, and Flood Resilience

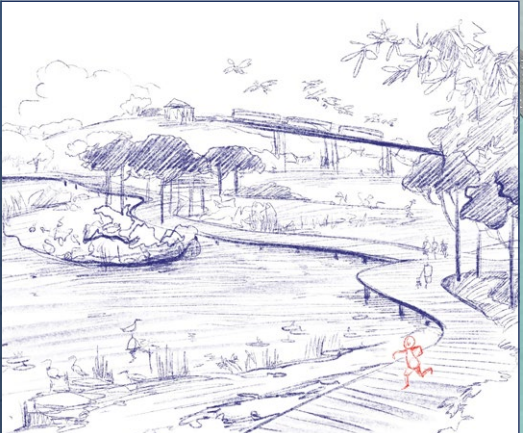
Landscape, structure, and environmental systems respond to flood risk through a layered drainage strategy that manages runoff as an active site condition. Planted corridors support both water retention and public space, while elevated structures and an integrated greenhouse accommodate fluctuating water levels and passive performance.



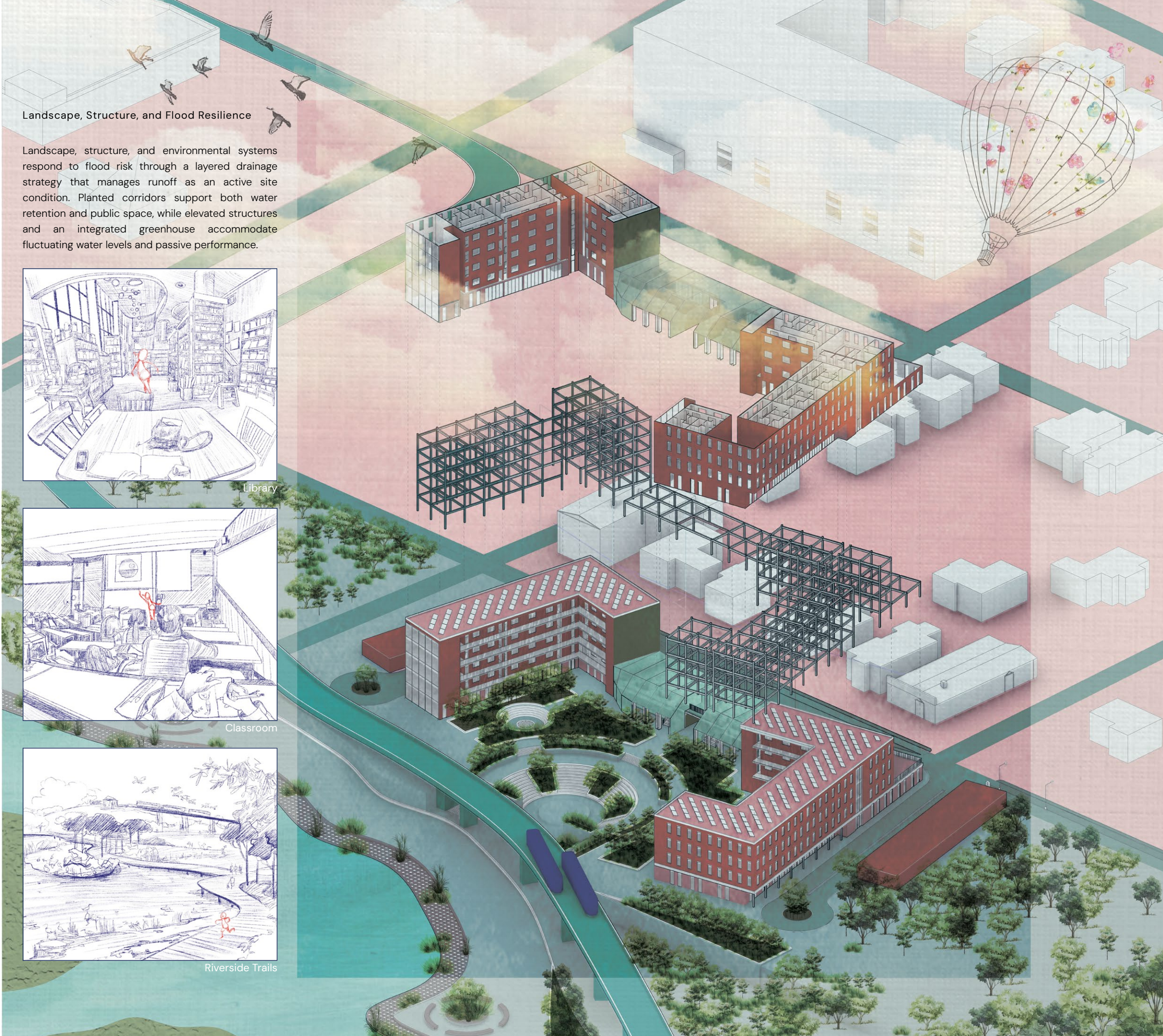
Library



Classroom

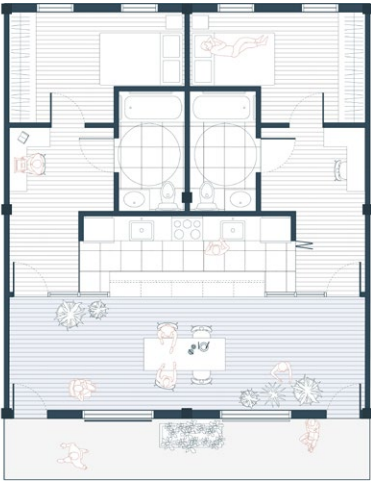


Riverside Trails

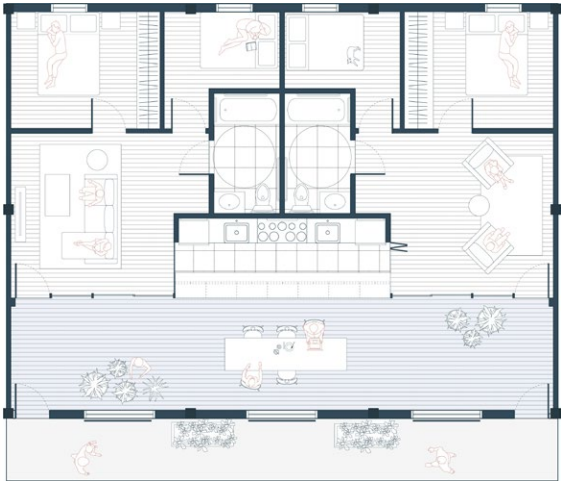


Cohousing, communal living, and multi-generational units at Preston Pathways support affordability and social connection through shared spaces and everyday interaction. An emphasis on natural sunlight improves interior comfort while reducing energy demands and strengthening shared living environments. Multi-generational units accommodate a range of household structures and life stages, reinforcing social bonds and adaptability over time. Together, these strategies promote efficient use of space and position housing as a social and spatial framework that supports inclusive, resilient community living.

Unit Typologies



1 Bedroom



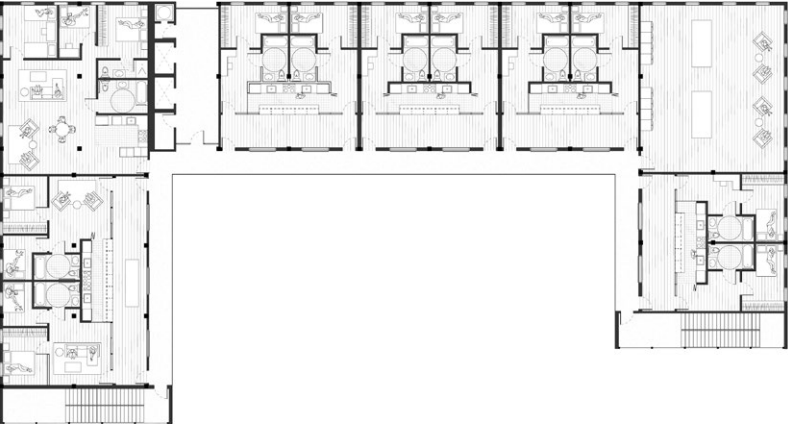
2 Bedroom



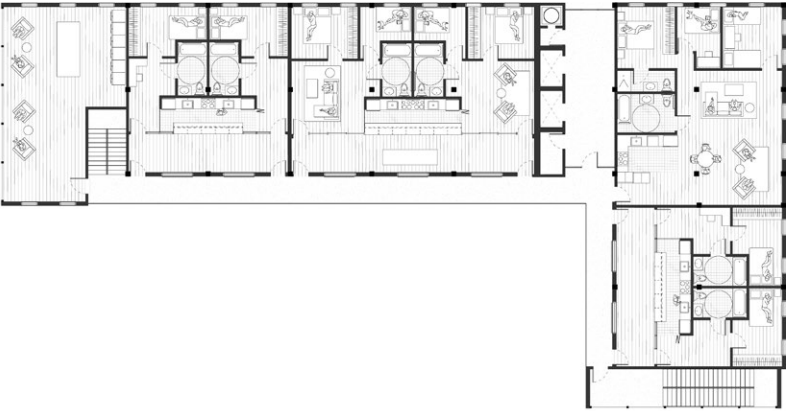
3 Bedroom



Multi-Generational



Building 1 Unit Plans



Building 2 Unit Plans





Physical Model

This physical model conveys the spatial and environmental logic of Preston Pathways through a tactile integration of landscape, structure, and communal space. Laser-cut materials articulate variations in ground condition, building massing, and drainage systems, emphasizing how landscape operates as both public space and infrastructure. Elevated circulation and structural frameworks respond to flood conditions by accommodating fluctuating water levels while maintaining connectivity across the site. Framed by housing and the greenhouse, shared courtyards and pathways reinforce everyday interaction and collective use, illustrating how environmental performance and social organization function as a continuous system.

