

# GREAT-WEST LIFE DAYCARE

GREAT-WEST LIFE ASSURANCE COMPANY  
51 BALMORAL ST., WINNIPEG, MB



▲ The front façade of the completed Great-West Life Child Care Facility

Following is a summary of the health, performance and environmental features of the building based on LEED® (Leadership in Energy and Environmental Design) criteria:

## quick facts

LEED®:	LEED® Platinum
client:	Great-West Life Assurance Company
location:	51 Balmoral Ave., Winnipeg, MB
contractor:	Mansfield Construction
consultants:	S/ Wolfrom M&E/ KGS Group C/ WSP Group L/ NADI Design
area:	9,515 SF
status:	Opened May 2017

## Sustainable Sites

The GWL – Child Care Facility is built within the West Broadway neighbourhood, sitting at the cusp of one of Winnipeg's oldest neighbourhoods. Shower facilities and bike storage have been provided for staff to encourage cycling to work, as well as bike storage to accommodate visitors and parents dropping off their children. The day care is situated close to Winnipeg's downtown, where multiple transit stops and routes make the day care accessible from all parts of the city.

The project provides more open space than was required by zoning for the children to enjoy the natural environment,

occupying over 51% of the site area. Exceeding minimum requirements, the space will remain open and vegetated for the life of the day care.

Stormwater management strategies using landscape and rainwater collection address the rate and treatment of stormwater on-site.

Careful thought and planning went into the interior and exterior lighting design, so as to reduce light pollution into the night sky and adjacent land.

This project breathed life into a home that had sat vacant for 20 years, and although there is no LEED credit associated with this, it contributes significantly to the economic and social vitality of Winnipeg's West Broadway Neighbourhood.

## Water Efficiency

The project maximizes water efficiency with the use of low flow fixtures and aerated faucets, with over a 50% reduction in potable water use. The fixtures alone contribute to exemplary water savings.

There is no permanent irrigation equipment needed for the day care's green spaces, as landscape design includes native, drought-tolerant species that will not require irrigation once established.

## Regional Priority

Regional priority focuses on giving extra weighting to existing credits that are important to a particular region. Stormwater Management, Optimized Energy Performance, and Water Use reduction are all identified as important for urban Manitoba sites.

CSA Guideline on Durability of Buildings adhered to during design and followed during construction.

## Integrated Design Process

The GWL Child Care Facility has been designed using an Integrated Design Process, whereby team members are able to advocate how system/design decisions impact their specific discipline. This results in decisions that have been critically evaluated and that are made with full understanding of their impact. During the design process, the project team reviewed several options for HVAC systems and compared each against many criteria, such as: energy savings, capital cost, life-cycle cost, and greenhouse gas emissions. The owner and project team decided on the option that eliminated the use of natural gas entirely, a decision which made the largest impact on greenhouse gas emissions projected for the project.



▲ Staff lounge on the second floor.



▲ Staff lunch room on the second floor.



▲ Staff offices on the second floor.



▲ Living Room / "DJ's Room" off of first floor entrance.

## Materials & Resources

The project has diverted almost 90% of construction waste from the landfill for reuse, recycle, or repurposing. Currently, over 14% of new materials, including rebar, concrete, and millwork, contain recycled content and over 35% of new building materials used were extracted and manufactured within an 800km radius of the project site (or transported by rail within a 2400km radius).

The building originally sat on 18" stone foundation on concrete footings. Due to a failing foundation, a complete remediation was required. In order to do so, the house was cut and lifted from its existing foundation and moved to facilitate construction of a new foundation. The process involved carefully removing the bricks from the house to relieve some of the weight in lifting the house. The process of lifting the house took about 2-3 hours, while sliding off the foundation took an additional hour. The house remained level and accessible while off its foundation. It was seamlessly lowered back onto the new foundation after 73 days on temporary beams, from June 14 – August 26, 2016. The original bricks, which had been meticulously catalogued and stored were placed back onto the house and construction continued.

A decision was also made by Great-West Life to restore the interior finishes similar to that of the original house. Many elements such as light fixtures, sliding pocket doors, main floor wood trim, original windows, brick fireplaces were salvaged and the original staircase remained in place throughout construction. All items were inventoried for reuse either within the project or for future Great-West Life projects. This reuse allowed the project to preserve historic features and eliminated the need to procure everything new.

Over 75% of the original structural walls, floors and roof of the existing house have been maintained, including reuse of several materials within. Retaining the original building materials reduced the environmental impacts of extracting, manufacturing, transporting, and incorporating new materials into the project.

The GWL Child Care Facility is designed for at least a 50-year lifespan. A durable

building ensures the selection of durable materials and components, quality control during construction, and increases the service life of the building.

## Indoor Environmental Quality

The GWL Child Care Facility is a non-smoking building and grounds. The building has been designed with optimal displacement ventilation that includes a 100% fresh air ventilation system to provide excellent indoor air quality for staff, children and visitors. All carpet, adhesives, sealants, paints and coatings used in the building were specifically chosen to have a low level of Volatile Organic Compounds (VOC), which can cause irritating effects or health issues for the installers as well as the building occupants. All composite wood used, including plywood, MDF and particleboard, contain no added urea-formaldehyde.

Each classroom contains displacement ventilation, which is an air distribution technology that introduces cool air into the breathing zone at a low velocity. It essentially lingers near the floor, and when a person enters the room or comes into the area, it carries the air supply upwards where it is then extracted.

An Indoor Air Quality Management Plan was in effect during construction and included measures such as covering openings in ductwork, keeping a clean worksite and scheduling in an effort to protect the indoor air quality of the building.

With occupant comfort of the utmost importance, outdoor air and humidity monitoring is integrated into the mechanical system controls. Classrooms and offices are designed with a high degree of controllability for users (accessible lighting and thermal comfort controls).

The daycare was designed so that 97% of regularly occupied spaces have views to the outdoors and that all regularly occupied spaces are receiving natural light, including the existing 100-year-old home.

## Energy & Atmosphere

Elements of the building design were selected to maximize occupant comfort and minimize energy consumption. The HVAC system will contribute to an energy

cost savings of an 53.75% compared to a baseline building designed with the Model National Energy Code for Building's standards, with most of the savings found in space heating and interior lighting. Energy conservation design features include:

- Ground Source Heat Pump System
- Passive chilled beam and radiant floor system
- Exhaust air heat recovery (air to air)
- Triple glazed fibreglass windows
- Reduced lighting power densities
- Interior lighting controls
- Low flow service hot water fixtures
- High efficiency service water heating system

To ensure the mechanical system is functioning as the design team intended, a commissioning agent has been a part of the design process, acting as a third-party reviewer of the system design for the Owner.

To minimize the impact of the building on the depletion of the ozone layer, all systems are CFC and HCFC free, and the fire suppression system contains no halons.

All of the south facing roofs of the new additions are structured to accommodate the future addition of solar photo voltaic panels. The capacity of panels, for which an allowance has been made, will create 10 kW of renewable solar energy, which will offset the electricity in the facility.

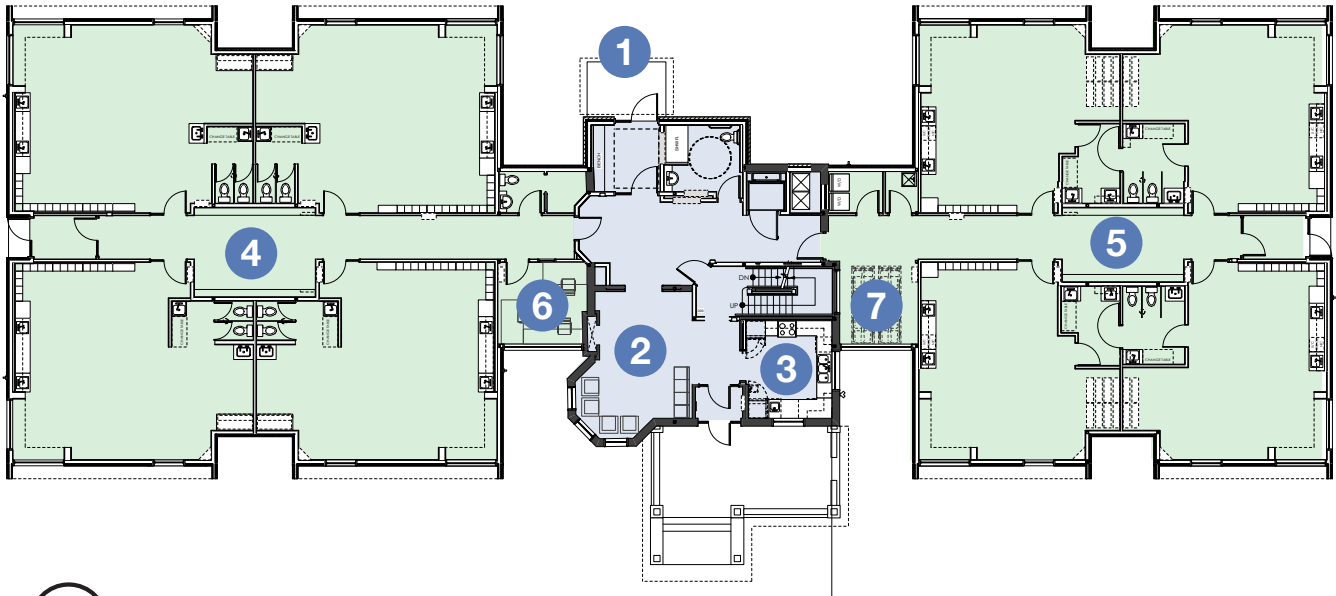
## Innovation & Design Process

Revitalizing a designated heritage home meant going through a detailed inventory of heritage items and receiving approval from the Heritage Society in order to undergo any renovations to the home. The GWL Child Care Facility is committed to communicating the importance of sustainable building and sharing the lessons it has learned with the parents of the children, staff, children, and members of the community. Tours of the facility for parents include sustainability information and a self-guided brochure as part of their environmental education program.

Addition:  
Preschool Wing

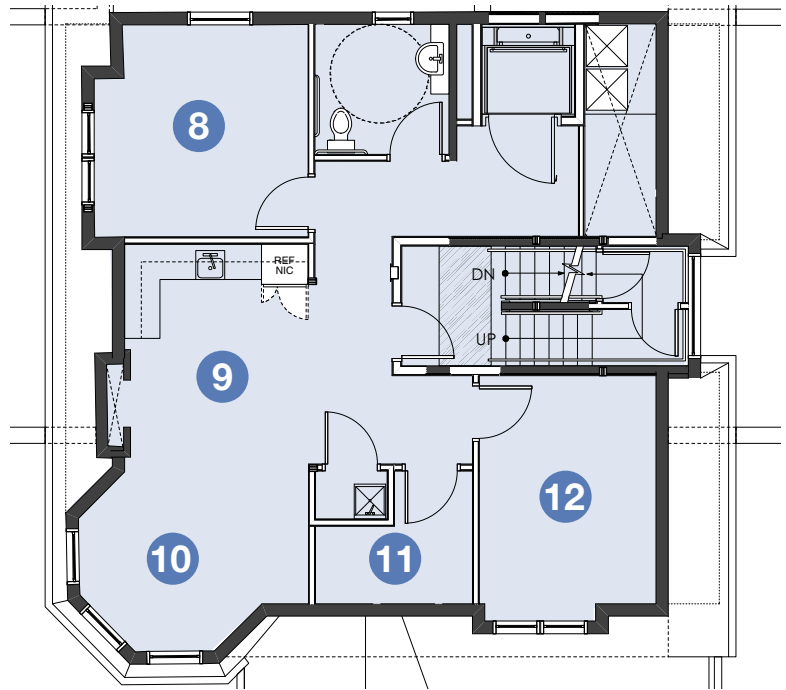
Original  
House

Addition:  
Infant & Toddler Wing



N  First Floor Plan

- 1 Entrance & Vestibule
- 2 Living Room / "DJ's Room"
- 3 Kitchen
- 4 Preschool Wing
- 5 Infant & Toddler Wing
- 6 Director / Supervisor's Office
- 7 Stroller Storage
- 8 Open Office
- 9 Staff Kitchen
- 10 Staff Lounge
- 11 Storage
- 12 Office



N  Second Floor (Original House)



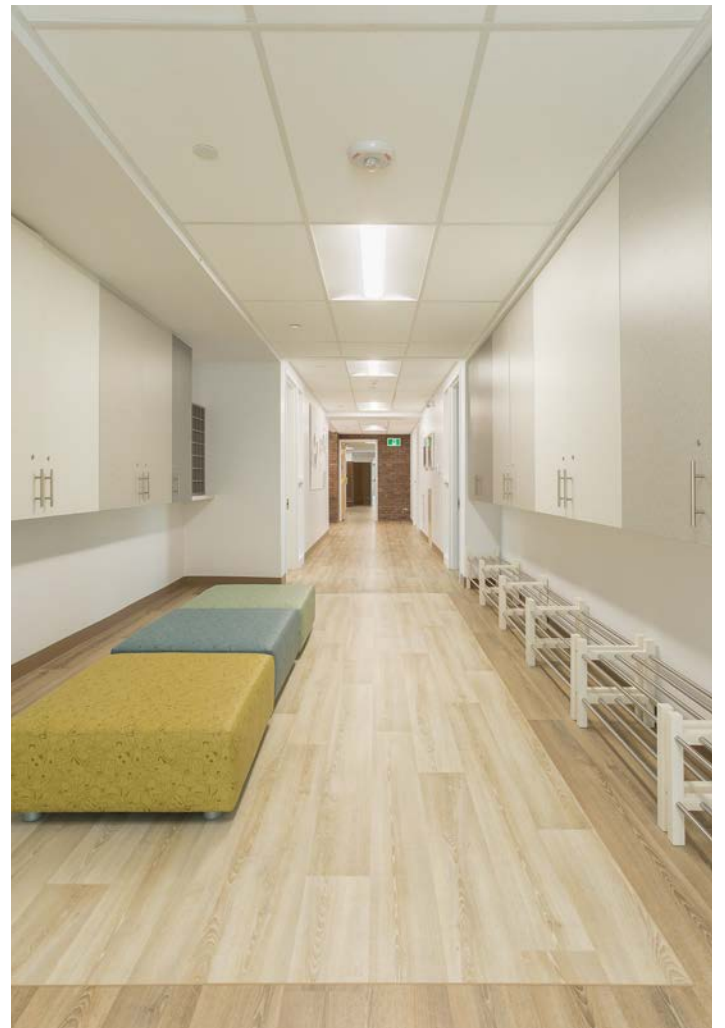
▲ Interior of a typical child care space, with high volume to bring in ample daylight.



▲ Interior of typical child care space highlighting adaptability.



▲ Director / supervisor office.



▲ Central corridor connecting new additions to the Milner House..