

2022

CANADIAN GREEN BUILDING AWARDS

THE NATIONAL PROGRAM OF
SUSTAINABLE ARCHITECTURE
& BUILDING MAGAZINE

SABMag

PART 1 PROJECT DESCRIPTION

Use for all categories. Projects are judged based on criteria of sustainable design, architectural merit and innovation.

Project categories

Identify which Award category you are entering

☐

1. Residential [small]

Open to new or renovated buildings less than 600m² in area, of which a minimum of 75% is dedicated to single-family or multi-family residential uses.

☐

2. Residential [large]

Open to new or renovated buildings [typically multi-unit buildings or groups of related buildings] greater than 600m² in area, of which at least 75% is dedicated to residential uses.

☐

3. Commercial/Industrial [small]

Open to new or renovated buildings up to 2,000m² in area, of which more than 75% is dedicated to commercial or industrial uses.

☐

4. Commercial/Industrial [large]

Open to new or renovated buildings [or groups of related buildings] greater than 2,000m² in area, of which at least 75% of the floor area is dedicated to commercial or industrial uses.

☒

5. Institutional [small]

Open to new or renovated buildings up to 2,000m² in area, of which more than 75% is dedicated to institutional uses.

☐

6. Institutional [large]

Open to new or renovated buildings [or groups of buildings] greater than 2,000m² in area, of which at least 75% of the floor area is dedicated to institutional uses.

☐

7. Mixed Use

Open to new or renovated buildings [or groups of related buildings] of any size, in which no individual use exceeds 75% of the overall floor area.

☐

8. Existing Building Upgrade

Open to buildings of any size or type in which the primary focus of the work has been to enhance the performance or extend the life of an existing structure. Entries in this category are required to respond only to the submission criteria appropriate to the project.

☐

9. Interior Design

Open to interior design projects of any size or type. Entries in this category are required to respond only to the submission criteria appropriate to the project.

An award will be given in each category at the discretion of the jury.

PROJECT DETAILS

Project name: Gastown Child Care Centre

Address: 150 Water Street & 151 W Cordova, Vancouver, BC

Year completed: 2021

PROGRAM AND CONTEXT

Project type: [Identify all uses occupying 10% or more of gross floor area]

Child Care: the two 460m² facilities provide a total of seventy four (x74) child care spaces total, comprising (x24) twenty-four infant/toddler spaces & (x50) fifty preschooler spaces.

Project site: [Check all that apply]

☐ Previously undeveloped land

☒ Urban

☐ Rural

☒ Previously developed land

☐ Suburban

Other Building description: [Check only one]

☒ New

☐ Renovation

☐ Both [If both, list ___% new and ___% renovation]

STATISTICS* Provide the following metrics as applicable to your project.

• Site Area: 3,060 m²

• Building gross floor area: 920 m² total (*both buildings combined*)

• Energy Intensity: 65.4 KWhr/m²/year [Include both base building and process energy]

[optional: report energy intensity separately as follows:

• Energy Intensity, base building: N/A KWhr/m²/year

• Energy Intensity, process energy: N/A KWhr/m²/year

• Reduction in energy intensity: 68 %.

• State the reference standard on which the % reduction is based: MNECB, NECB or ASHRAE 90.1

[include version]: NECB 2011

• Recycled materials content: N/A % by value

• Water consumption from municipal source: 4,357 litres/occupant/year

[Include both base building and process consumption]

• Reduction in water consumption: 26 %

• State the reference on which the % reduction is based: LEED ☒ or other ☐

• Construction materials diverted from landfill: 65 %

• Regional materials by value: N/A %

***NOTE FOR PART 9 RESIDENTIAL PROJECTS: PROVIDE THE STATISTICS ABOVE IF AVAILABLE.** Include in the Executive Summary [see next page] the EnerGuide or the Home Energy Rating System [HERS] ratings if available, and the WalkScore rating [see www.walkscore.com]. Also, a qualitative assessment of project performance should be included in the appropriate sections of the narrative.

**GASTOWN
CHILD CARE
CENTRE**

Vancouver, BC



view to south

GASTOWN CHILD CARE CENTRE

Vancouver, BC

project summary

The Gastown Child Care Centre is a creative response to an intriguing City of Vancouver initiative to develop child care centres atop under-utilized parkades located in the downtown core. The innovative solution features two 400m² prefabricated, 37-seat, Passive House and LEED Gold certified child cares with a focus on net-zero energy and low carbon fuel sources to serve the local community. To optimize efficiency; economy; and repeatability, various elements of the building; canopy; support plinth; enclosure; and outdoor play are virtually identical prefabricated components.

A raised construction crane located in an alley between the two parkades allowed vehicles to pass below while prefabricated glulam structures, insulated wood cassettes, and outdoor play area components were lifted to the top of the parkades for assembly. An elevated large-span steel platform allows surface rainwater to flow into the existing drainage system. New structural loads are efficiently transferred to the parkade structure to negate costly seismic upgrades.

Oriented toward Burrard Inlet and the spectacular Northshore Mountains, the rusty red-hued buildings, bright yellow storage sheds, bold and colourful outdoor play areas, and multi-coloured tricycle court provide imaginative play opportunities. An open-air bridge spans an alley, connecting the child cares and making them one.

strategic decisions

Consistent with efforts to make the best and highest use of existing resources and to develop child care facilities in the downtown core, the City of Vancouver (CoV) undertook an initiative to study the feasibility of using City-owned parkades as possible child care sites. Eight sites were initially considered to determine suitability, with two parkades located in Gastown identified as preferred sites. A preliminary structural report established that the project was likely feasible from a structural, seismic, safety, and building code perspective.

The CoV goal and objective was to add 74 new child care spaces toward a 1,000-space target included in a proposed 2015-2018 capital plan. Each facility was to provide a 12-space toddler program and a 25-space 3-5 group child care.

Early in the design process, CoV Social Planning requested that the child care buildings and outdoor play areas be oriented to take advantage of views to Burrard Inlet and the North Shore Mountains. In response, the Passive House design strategy required particular attention to ensuring that the highly insulated envelope and high-performance windows were appropriately designed to counter a reduction in the potential amount of south-facing glazing.

light and air

The child care buildings are oriented to the north to take advantage of the spectacular views of Vancouver's working waterfront and the North Shore Mountains through a generous band of triple-glazed windows and sliding doors that provide direct access to an outdoor play environment. Above the north-facing opening, an expansive, translucent glazed canopy provides bright natural daylighting for covered outdoor play areas while also enabling a greater degree of natural daylight to illuminate the interior spaces. Glazed canopies, light-coloured roof materials, and landscape elements reduce the heat island effect.

Skylights located in the main activity areas provide additional natural daylight for indoor play. The skylights are openable and can be used in tandem with the operating windows and sliding glass doors to increase interior air movement and ventilation. Natural ventilation is highly encouraged and a high-performance envelope allows natural ventilation to be used for longer durations than buildings with standard envelopes. Regularly occupied rooms account for more than 80% of the floor area and all rooms have access to operable windows within 7 meters. The high-performance envelope and natural ventilation reduce mechanical heating and cooling so it is only operational during seasonal temperature peaks and lows.

A high-efficiency energy recovery ventilator (ERV) provides a minimum of 0.5 ACH of outdoor air with the ability to increase to 1.6 ACH during occupied hours. Fan coil units are provided to increase air circulation rate within the space when needed and carbon filters in the ventilation air supply filter out air particulate contaminants.

Occupancy sensors turn off lights when rooms are not in use. Dimmers reduce illuminance if event lighting is too bright. Various areas are zoned for lighting control. Photocells and an astronomical time clock control the exterior lighting. Backlight and uplight glare are reduced through careful lighting design.

wellness

The project is located in a dense urban historic area with access to quality transit and diverse uses within walking distance, thereby reducing reliance on single occupancy automobiles. The neighbourhood is well connected with cycling networks. Ample bike storage is available for staff, parents and visitors.

Passive House criteria for thermal comfort with a maximum temperature difference of 4 K between indoor air and surface temperature was achieved, meaning that children can play on the floor or next to a window without feeling cold during the winter. The high-performance envelope permits longer hours of natural ventilation with doors and windows being open, which promotes well being through an immediate connection to the outdoors

water conservation

Indoor water use reduction of 26% is achieved with water-efficient fixtures. Potable water consumption is projected to be 4.3 m³ per occupant annually. End of trip change rooms and showers are provided. Drought-tolerant plants and an efficient irrigation system achieve an outdoor water use reduction of 59%.

operating energy present & future

The project is Passive House certified, LEED v4 Gold certified, and conforms to ASHRAE 90.1- 2010. The facility has a low heating demand (TEDI) of 15 kWh/(m²a) and an exceptional airtight building envelope of 0.6 ACH at 50 Pa. The active design is based on a Passive House-certified energy recovery ventilator (ERV) with 84% energy recovery and an air-source heat pump providing heating in winter and cooling in the summer. Air-source heat pumps are more efficient than gas-fired boilers and chillers and result in lower carbon emissions. Services entering and exiting the building are minimized and strategically located to reduce the number of envelope penetrations and thermal bridging. Energy modelling indicates that the facility will achieve 67% energy cost savings when fully operational.

LED lighting is utilized throughout to reduce energy use and maintenance. Occupancy sensors are installed in all spaces except the kitchen. Photovoltaics installed on the rooftops of the buildings produce 7 kW of onsite renewable energy to offset 19% of the total building energy load.

materials & resources

Selection of construction materials and finishes was based on regional availability, recycled content, and low off-gassing products. Criteria included a review of transparency documentation with respect to supply chain and raw materials, with priority given to products with Environmental Product Declarations and Health Product Declarations.

Waste diversion was achieved through the separation of onsite waste streams to the greatest degree possible. Commingled bins were also used due to the lack of space on the tightly constrained site. Waste diversion from landfill was 65%.



view to northeast



WATER VIEW
YMCA CHILD CARE

outdoor play



covered play





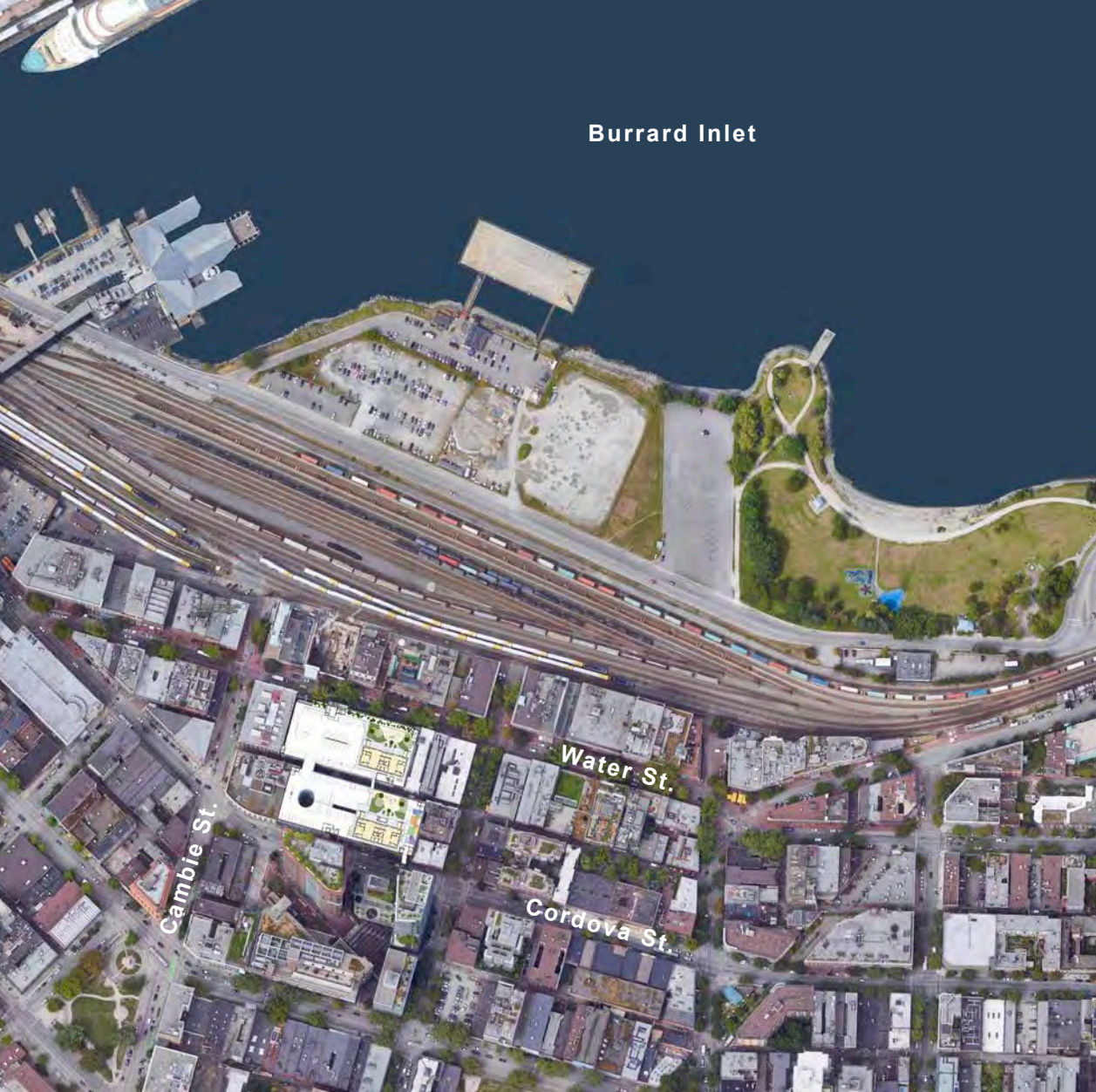




tricycle court

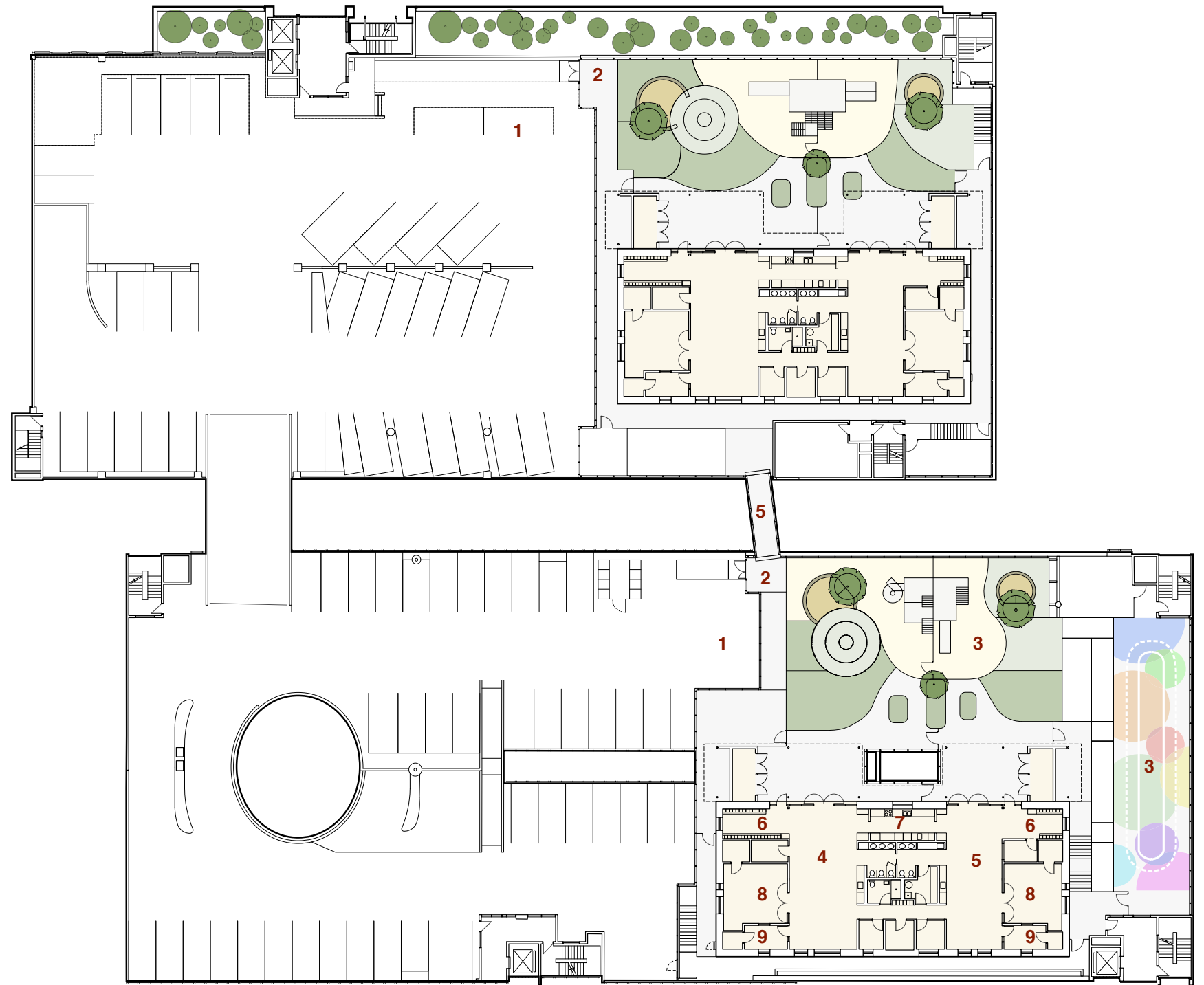


view to the southeast



KEY

parking & drop-off	1	cubbies	6
facility entrance	2	kitchen	7
outdoor play	3	activity room	8
infant toddler play	4	quiet room	9
preschooler play	5	administration	10



rooftop plan

KEY

- 1 north child care
- 2 south child care
- 3 outdoor play
- 4 entrance
- 5 bridge
- 6 parking & drop-off

W Cordova St

Abbott St

Cambie St

Water St

context

KEY

- 1 north child care
- 2 south child care
- 3 outdoor play
- 4 bridge



Water St

W Cordova St

section

KEY

- 1 infant/toddler play
- 2 preschooler play
- 3 activity room
- 4 kitchen
- 5 quiet room
- 6 administration
- 7 cubbies
- 8 service
- 9 storage
- 10 outdoor play

