2010 Vancouver Olympic and Paralympic Winter Games – Venue Construction Environmental Considerations

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VANOC - Vancouver Organizing Committee for the 2010 Olympic and Paralympic Winter Games

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Outline

- Our Venues
- Overview of VANOC’s Construction Environmental Objectives
- Environmental Highlights at Specific Venues
- Summary
- Question and Answer

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Our Venues

- 13 venues being constructed and upgraded
- 2 athletes villages

Our Venues

- 9 venues in the Vancouver Area,
  - 5 new venues were constructed (Vancouver Olympic/ Paralympic Centre, Thunderbird Arena, Richmond Olympic Oval, Killarney Arena, and Trout Lake Arena),
  - 4 venues were upgraded (Canada Hockey Place, BC Place, Pacific Coliseum, and Cypress Mountain)
- 1 Vancouver Athletes Village

Our Venues

- The remaining 4 venues are in Whistler
  - 3 new venues were constructed (Whistler Sliding Centre, Whistler Olympic Park, and Whistler High Performance Athletes Center)
  - 1 - Whistler Creekside Venue was upgraded to Olympic standards.
- 1 Whistler Athletes Village

Overview – Key Environmental Objectives

- 13 venues and 2 villages were designed and constructed with the following objectives to minimize environmental impacts:
  - Environmental Assessment - regulatory compliance & assurance
  - Upgrade existing buildings instead of constructing new buildings to meet Games venue requirements
  - Utilizing Venues for both Olympic and Paralympics to minimize required infrastructure
  - Construction program targeting brown field sites, already disturbed natural areas
  - Multi-purpose features with plans for legacy operation
  - Construction to meet LEED™ green building rating system

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Overview – Key Environmental Objectives

VANOC targets LEED™ building certification at a minimum “silver” criteria but achieves “gold” in most cases. What is LEED™?

- The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ is a universally understood and accepted tool and performance criteria, managed through the Canada Green Building Council. http://www.cagbc.org/index.htm

- LEED is a third-party certification program and an internationally accepted benchmark for the design, construction and operation of high performance green buildings. It provides building owners and operators the tools they need to have an immediate and measurable impact on their buildings’ performance.

Overview – Key Environmental Objectives

- LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health:
    - sustainable site development
    - water efficiency
    - energy efficiency
    - materials selection
    - indoor environmental quality

  Credits and Prerequisites are organized into these five categories.

- Certification is based on the total point score achieved, following an independent review and an audit of selected Credits. With four possible levels of certification (certified, silver, gold and platinum)

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Environmental Highlights at Specific Venues

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Whistler Sliding Centre

- Scope
  - Off Site Civil Connections: Sewer, water, hydro
  - On Site Civil Works: site clearing, services, roads, grading
  - Bobsleigh Track, 7 Buildings, Track Systems, Refrigeration Plant, Landscaping
- Environmental Highlights
  - Environmental Assessment
  - Minimized foot print of sliding track,
  - Buildings are targeted for LEED™ gold certification
  - Long term post Games operational legacy – athletes training

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Whistler Sliding Centre

Whistler Sliding Centre

Whistler Olympic Park

- Scope
  - three separate stadiums located approximately 500m apart
  - 14 km of competition trails (5 km lit / paved); 9 km of training trails; 20 km of recreational trails
  - 15 bridges and culvert crossings
  - Two ski jumps K-95 and K-125 with chairlift access
  - 10,600 foot^2 Daylodge designed for phased expansion
  - Technical buildings with legacy wax rooms
  - Maintenance Facility
  - Water Treatment Plant and Waste Water Treatment Plant treated to tertiary level

Whistler Olympic Park

- Environmental Highlights
  - Relocation of ski jump from original design reduced the venue footprint by 30%, reduced the number of stream crossings, roadways and length of service distribution
  - Wood waste generated onsite was composted and reused as organics material on the entire venue.
  - Buildings are targeted for LEED™ silver certification
  - Long term post Games legacy for recreational use and high performance athlete training

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Whistler Olympic Park Trails

Whistler Olympic Park Day Lodge

Two ski jumps K-95 and K-125

On site composting operation to reuse wood waste to produce organics for the ski jump

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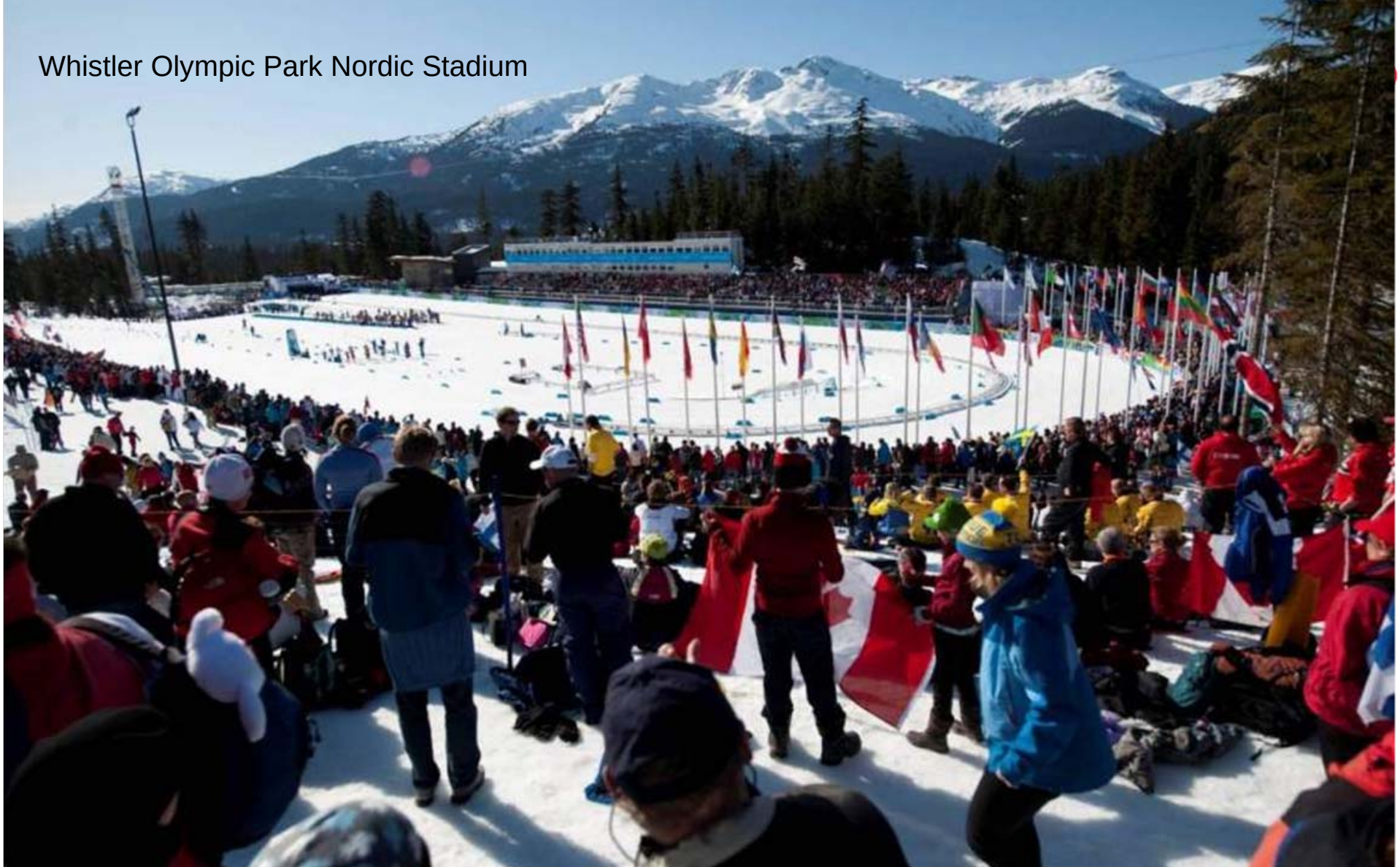
Whistler Olympic Park Nordic Stadium

Whistler Creekside

- Scope
  - Improvements include contouring and reshaping of the men's and women's downhill courses, additions to the existing snowmaking infrastructure and new snowmaking on the Ladies and training courses.
- Environmental Highlights
  - Upgrade of existing ski runs to eliminate additional tree clearing
  - Relocation of course to preserve sensitive species of tailed frog
  - Legacy use: course is suitable for future World Cup events and athletes' training

Whistler Creekside Stadium

Cypress Mountain

- Scope
  - Improvements to existing ski runs to develop courses for half pipe, moguls, aerials, PGS, SBX, and Ski-X
  - new snow making system including reservoir and pumping station
  - a new fixed grip chairlift, new parking lot, aerials judges tower, aerials surface lift and site wide high power electrical upgrades
- Environmental Highlights
  - Minimize disruption to Mountain by improving and utilizing existing ski runs and relocating snow making reservoir into brown field location.
  - Provide an environmental and sustainable design solution with consideration of environmental compensation initiatives

Plant Salvage Operation


Cypress Mountain Venue

Cypress Half pipe &
Snowboard Stadium

Thunderbird Arena

- Scope
  - The redevelopment included the refurbishing of the existing competition arena and the construction of two new ice sheets: one was used for the competition arena and one was used for a Olympic Overlay.
  - The existing arena which was refurbished was used as a training ice sheet during the Games.
- Environmental Highlight
  - Reuse of facility as Olympic and Paralympic venue
  - Legacy use as a community and University hockey arena
  - The building was constructed to LEED™ silver levels

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Thunderbird Arena

Hastings Park / Pacific Coliseum

- Scope
  - Seating replacement, full building renovations including a new elevator, and accessible viewing platforms
  - Slab widening to international ice
  - New ice plant and dehumidification
  - Power supply reliability upgrades and new “Field of Play” lighting
- Environmental Highlights
  - Upgrade of existing facility eliminated new building construction
  - Improved facility provides legacy benefits to community and future events
  - New ice plant including legacy connection to adjacent building ice sheet
  - Building upgrades targeted efficient best practice sustainable designs eg: low flow toilets, motion lights, and high efficient lighting

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Hastings Park/ Pacific Coliseum

Vancouver Olympic/ Paralympic Centre

- Scope
  - 16,600m^2 Recreation Centre built for Curling Venue. Legacy use includes Curling Club, Community Rink, Community Centre, Preschool, Parks District Office, Fitness Centre and Aquatic Centre (50m Lap Pool, Leisure Pool, Hot Pool, & Outdoor Pool)
  - Civil works – 3 parking lots, road connections, water service and upsizing sewer systems
- Environmental Highlights
  - During planning phase, combined two civic buildings into one in order to minimize foot print and take advantage of heat transfer
  - Building was sited on existing parking lot to minimize loss of play fields
  - The building replaces two obsolete facilities resulting in a zero net green space loss situation.

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Vancouver Olympic/ Paralympic Centre

- Environmental Highlights cont…
  - Phased construction allowed for the accommodation of Olympic spectator seating. Following the Games, interior walls are constructed to finish recreation centre for legacy use.
  - The building is targeted for LEED™ Gold certification
  - Sustainability: Forest Certified Wood, Energy Efficient Heat Exchange, Rainwater Collection
  - Use of hard floor tent structures for Games time spectator concourse around the building ensured that the facility was not over built for its legacy use
  - The venue was used for both Olympic and Paralympic Games

Vancouver Olympic Centre

Vancouver Olympic Centre

Vancouver Olympic Centre
Use of natural wood products

Richmond Olympic Oval

- Scope
  - new 400-metre track housed in a 33,750-square-metre facility
  - design elements include a state-of-the-art ice plant with superior air quality and climate controls
  - facilities and systems include offices, timing and athlete monitoring equipment, and fitness and strength training areas
- Environmental Highlights
  - The building is targeted for LEED™ silver certification
  - Sustainability: Use of Pine Beetle Wood, Water conservation
  - Following the Games, the Richmond Olympic Oval is converted into 2 ice arenas, fitness centre, indoor track, and dry court activity centre for community legacy use.

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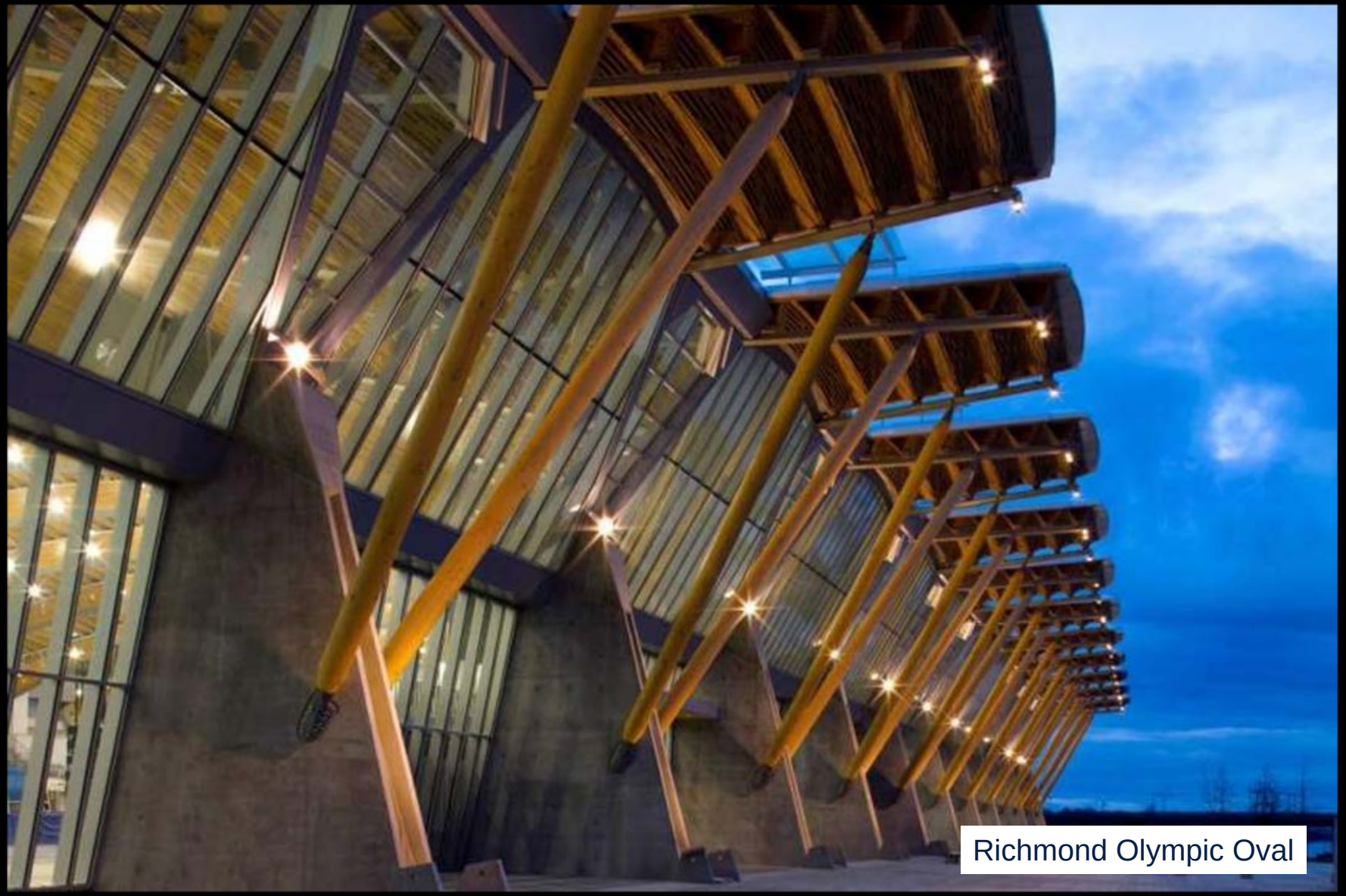
Richmond Olympic Oval


Richmond Olympic Oval

Richmond Olympic Oval

Training Venues: Killarney & Trout Lake

- Scope
  - Working closely with the City of Vancouver to upgrade two newly constructed recreation centre ice arenas to international size ice sheet for figure skating and short track speed skating practices.
- Environmental Highlights
  - Killarney and Trout Lake are targeted for LEED™ gold and silver certification, respectively. 80% waste diversion.
  - For both arenas, the new construction occurred on the existing building foot print
  - The ice sheets were design for conversion between North American and international size ice sheets to accommodate the Games
  - The arenas remain as a legacy for community ice sports

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Training Venues: Killarney & Trout Lake

Trout Lake Arena

Killarney Arena

BC Place – Opening & Closing Ceremonies

- Scope
  - Spectator concourse: Improved way finding, washroom and concession upgrades, improved accessibility including additional disabled seating, redesigned suites, and new vestibules to provide barrier free access into the building
  - Contribution to ceremony and show stage related improvements for lasting legacy in the building.
- Environmental Highlights
  - Upgrade of existing facility eliminated new building construction
  - Renovations included sustainable water use reduction features
  - The venue was used for both Olympic and Paralympic Games through minor renovations

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BC Place Stadium

Vancouver Athletes Village

- Scope
  - The 1,100-unit project to be a sustainable community in the area
  - modern low- and mid-rise accommodation for 2,700 athletes and officials, an average distance of 12 kilometres from Vancouver area competition venues
- Environmental Highlights
  - Use of a District Energy System for building heating, and gray water toilet flushing
  - Remediation an existing brown field contaminated site and creation of tidal island for riparian habitat.
  - Following the Games, the units become market and social housing
  - All buildings are targeted for LEED™ certification. In some cases, targeted for Platinum certification.

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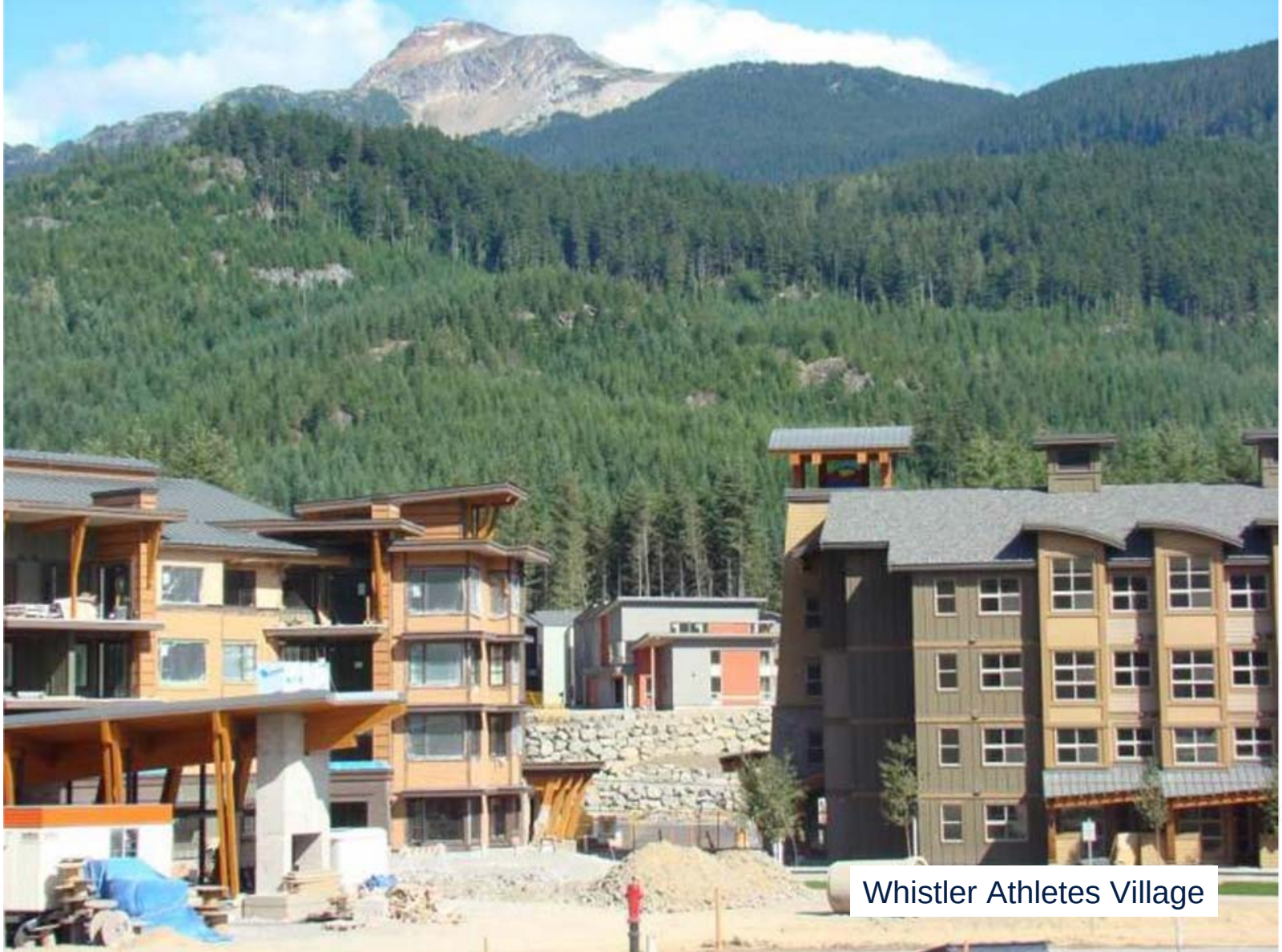
Vancouver Athletes Village

Whistler Athletes Village

- Scope
  - The conceptual site plan includes the development of land for the Games–time functions to accommodate the international and non-housing functions of the residential zones, back-of-house areas and some of the required parking and transportation needs. The area under went site grading to meet accessibility and functional requirements. Supplemental parking was proposed on the adjacent cleared lands. 450 beds were wheelchair accessible.
  - includes the construction of a high performance training facility building, and the construction of associated athletes training accommodations in various forms ranging from hotel/hostel to townhouse style units
- Environmental Highlights
  - Use of a District Energy System for building heating
  - Following the Games, the units become market housing for Whistler residents.
  - Buildings are targeted for LEED™ certification.



Whistler Athletes Village

Summary

- Situate new venues in previously disturbed areas to minimize impact to undisturbed lands
- Where possible, renovate existing buildings instead of constructing new buildings to meet Games venue requirements
- Construct new venues with sustainable design by incorporating practises and technologies that minimize environmental impacts
- Look for opportunities to use facilities for both Olympic and Paralympic venues
- Planning should include a long term legacy use for facilities after the Games

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Questions?

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