

# ROUNDHOUSE

DESIGN GUIDELINES

July 2008 (Revised 2015)



FOCUS EQUITIES



**PREPARED BY**

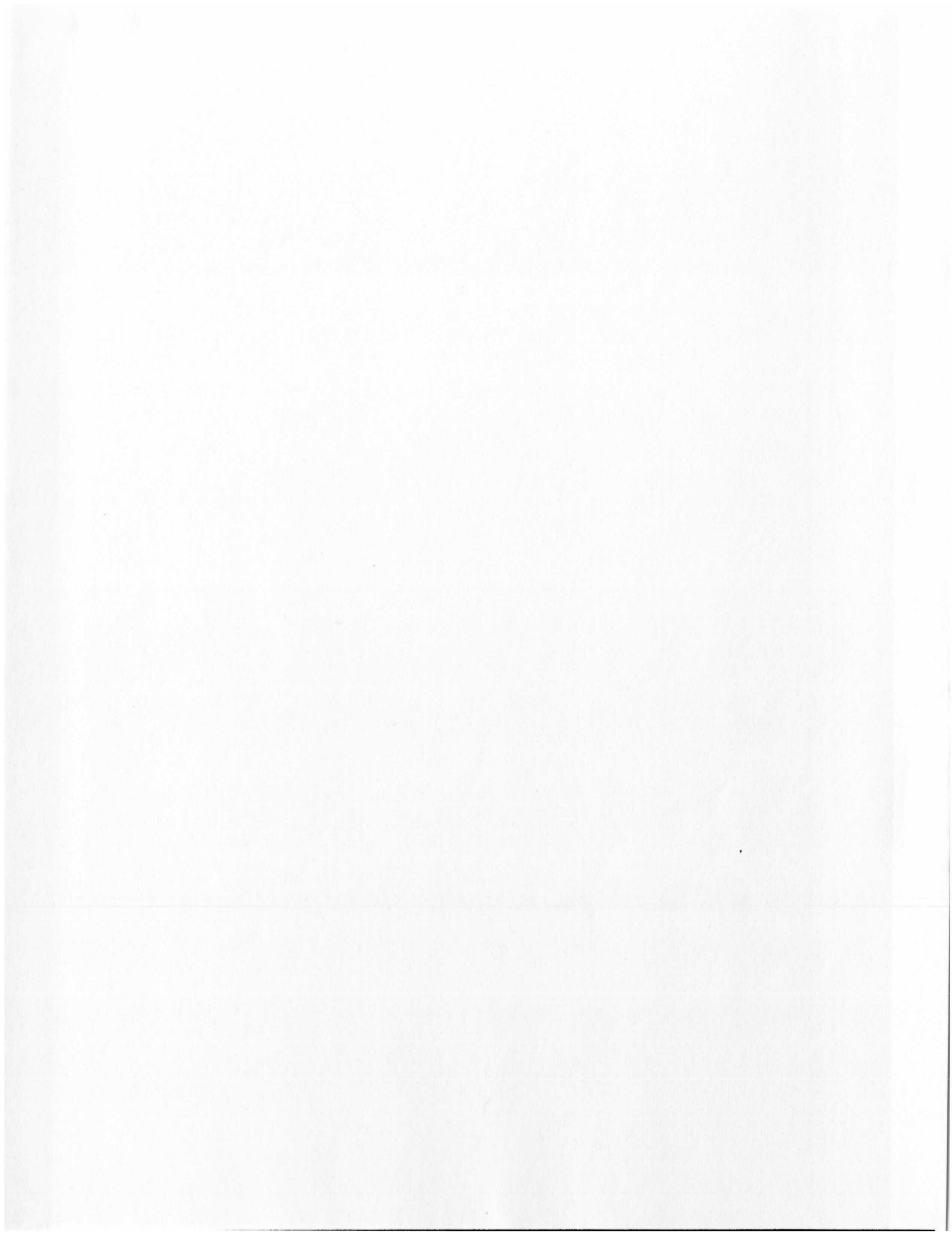
HOTSON BAKKER BONIFACE HADEN ARCHITECTS + URBANISTES, NOW DIALOG  
PHILLIPS FAREVAAG SMALLLENBERG LANDSCAPE ARCHITECTS, NOW PFS STUDIO  
LANDECA PLANNING

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## APPENDIX A.1 PEDESTRIAN LEVEL WIND STUDY - EXECUTIVE SUMMARY

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## 1.0 DEVELOPMENT VISION

*Celebrating the past and building a stronger, more vibrant community for the future.*

*Illustrative Development  
Concept Plan  
AMENDED [MONTH] 2015*

The Roundhouse Historic Railway Precinct and its surrounding site is located in one of the last undeveloped areas of the Songhees Peninsula and represents a unique opportunity within the City of Victoria. What is distinctive about the site is the historic landmark formed by E&N Railway buildings, the Turntable, and the yard surrounding these structures. Nowhere else in Canada is there a surviving Roundhouse complex left almost in its original form. The opportunity exists to restore this historic railway precinct through careful conservation and by allowing sufficient development on the remainder of the site to endow and sustain the substantial economic cost involved in its retention.

The overall vision for the site is one of mixed-use, catering to the local community and visitors to Victoria through the complement of uses and activities selected for the project. These uses will include retail, restaurant, arts and crafts, railway interpretation, railway maintenance, office, hotel, residential and recreation. An important feature of the overall development plan for the site is its connectivity to the surrounding neighbourhood. The pedestrian and bicycle connections must be maintained through the development as 24-hour, public use areas.

Detailed guidelines have been developed to sustain and reinforce these overall objectives for the site.



## 2.0 INTENT

This document presents a set of design guidelines that will shape the form of development and quality anticipated in the redevelopment of the Roundhouse site. These guidelines will have application at the Development Permit stage for individual parcels within the site. The Roundhouse Design Guidelines have been developed in consultation with the City of Victoria and project stakeholders.

### 2.1 How to Use the Design Guidelines

Design guidelines are meant to “guide” the development team, the City of Victoria, and the general public interested in ensuring that a qualitative approach is taken to the redevelopment of the site. Another important feature of guidelines is that they are not hard and fast rules. They are intended to have a degree of flexibility to allow for design interpretation on the part of all those involved in the development process. However, their intent must be followed in any design and design review process.

### 2.2 Companion Documents

These guidelines shall also be used in conjunction with the following City of Victoria Policy documents, and others as determined by the City of Victoria:

City of Victoria Official Community Plan  
City of Victoria Zoning Regulation Bylaw  
Roundhouse Master Development Agreement  
Crime Prevention Through Environmental Design Guidelines

In addition, the document entitled “Roundhouse Celebrating Our Heritage, Interpretive Approach for the Roundhouse Railway Heritage Site and Residential Community”, May 2008 will be referenced for guidance when considering heritage interpretive elements; however, the contents of the document will not be mandatory guidelines.

### 2.3 Figures and Illustrations

A number of illustrative figures, plans and views have been used in the Design Guidelines as a means of conveying design concepts. It is anticipated that the actual buildings and landscapes may differ from the diagrams as detailed designs are advanced.

### 2.4 Must, Will and Shall

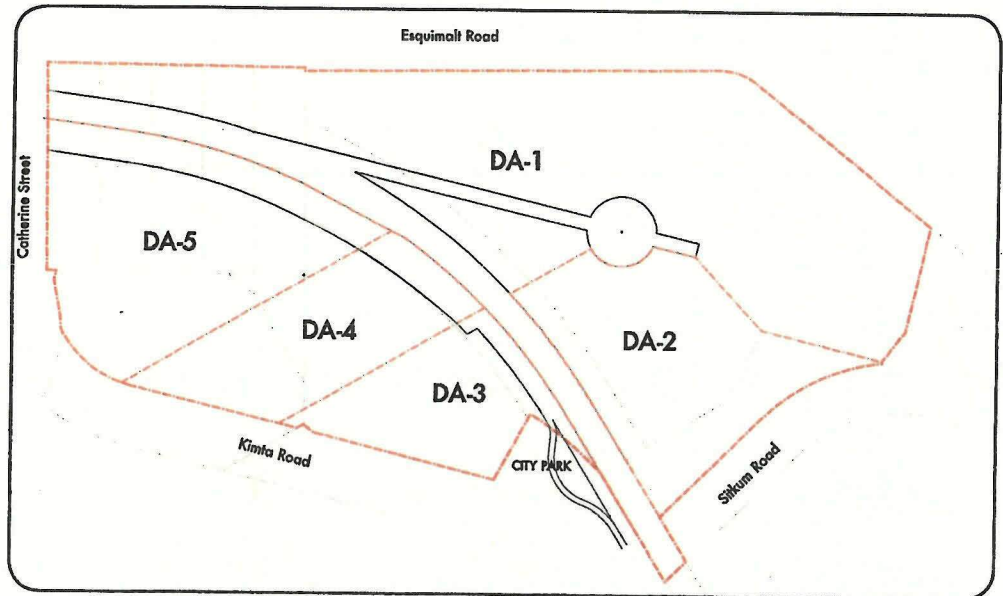
Throughout the design guidelines the terms ‘must, will and shall’ are used to describe the mandatory guidelines that must be met. Additional provisions are intended to help guide the design proposals to ensure compatibility with the overall site development concept, while allowing for creativity and flexibility in the design process and noted above.

## 2.5 From General to Specific Guidelines

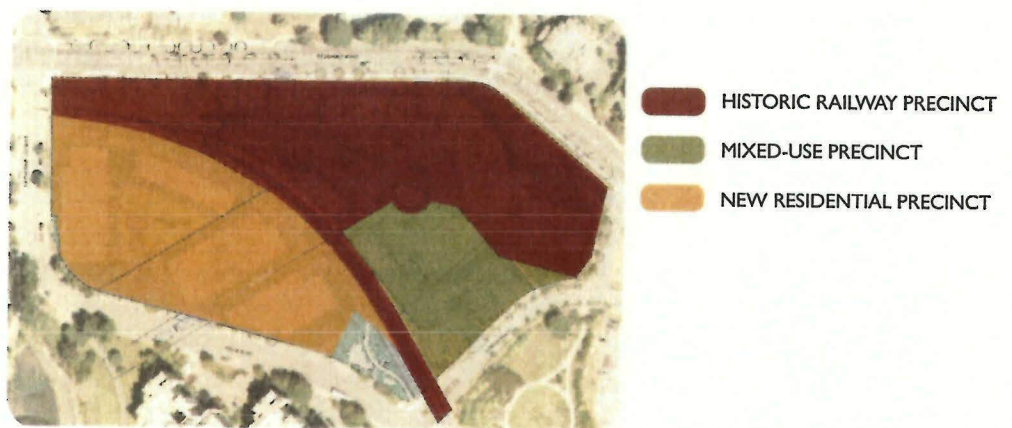
The Roundhouse Design Guidelines serve to capture the intended development vision for the overall site. Detailed design of buildings and open spaces will be guided by the directions of the Roundhouse Design Guidelines and advanced at the Development Permit Application stage.

The Roundhouse Design Guidelines include Site Wide Guidelines, pertaining to built form and open spaces across the entire site, and Development Area Guidelines that apply to each of the primary development parcels within the site. The design guidelines also include Sustainable Development Guidelines, which outline approaches to achieving more environmentally-responsible development in keeping with the City's "green" initiatives.

*Development Area Plan*



*Roundhouse Precinct Plan  
Revised 2015*

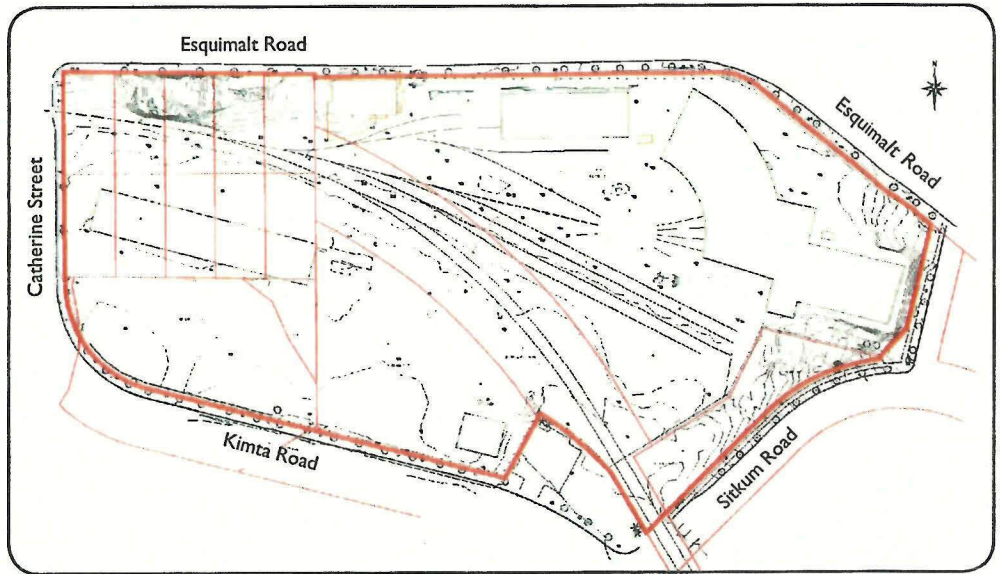


### 3.0 SITE WIDE GUIDELINES

#### 3.1 Introduction

The Roundhouse Design Guidelines are applicable to the lands bounded by Esquimalt Road to the north, Sitkum Road to the east, Kimta Road to the south and Catherine Street to the west.

Site Map



#### 3.2 Heritage Conservation

The key guiding principle of the overall Roundhouse redevelopment is the conservation of the historic Roundhouse buildings, including the 10-bay Roundhouse and attached Backshop, the Car Shop, the Stores Building and the Turntable. These buildings and structures are designated as a National Historic Site, officially designated as The Esquimalt and Nanaimo National Historic Site of Canada, and have been designated as municipal heritage property by the City of Victoria. A detailed conservation strategy has been prepared to guide the heritage conservation works required to restore and reuse the buildings.

- Heritage review of design proposals for the conservation and reuse of any of the Roundhouse buildings and structures shall be required.
- Conservation and reuse of the Roundhouse buildings and structures shall be sensitive to the historic fabric and heritage values of the buildings and their character-defining elements.



### 3.3 Building Massing + Height

Conservation of the Roundhouse Historic Railway Precinct informs the overall site plan and directs new buildings to be located in a manner that respects the historic precinct and the assemblage of designated heritage buildings and structures, while also creating open space and maintaining view corridors. In general, building massing is focused on the portions of the site located to the south of the Historic Railway Precinct and transitions between taller elements located adjacent to the natural hilltop features to the east and lower elements that relate to the waterfront park at Lime Bay to the west.

- New construction will be complementary to, distinguishable from, and respectful of the heritage buildings
- Tall, slender building forms are intended to provide public open space with optimal sun exposure in the public Turntable Plaza. This urban design strategy is also intended to provide adequate separation distances between residential buildings for livability and privacy.
- Building mass and height shall be stepped away from the harbour. Building height is encouraged to acknowledge topography of the land, and to respect adjacent context, in particular, the heritage-designated Roundhouse buildings, the low-rise character of the Victoria West neighbourhood to the west and the mid and high-rise context of the Dockside Green and Bayview developments to the east.
- View corridors between the buildings towards the waterfront and into Turntable Plaza are intended to be preserved for the enjoyment of the pedestrian at ground level.
- Podium building forms and terracing will be provided and designed to lessen the perception of building mass from the pedestrian perspective.

*Roundhouse Massing Concept*



*Roundhouse Massing Concept,  
from West*



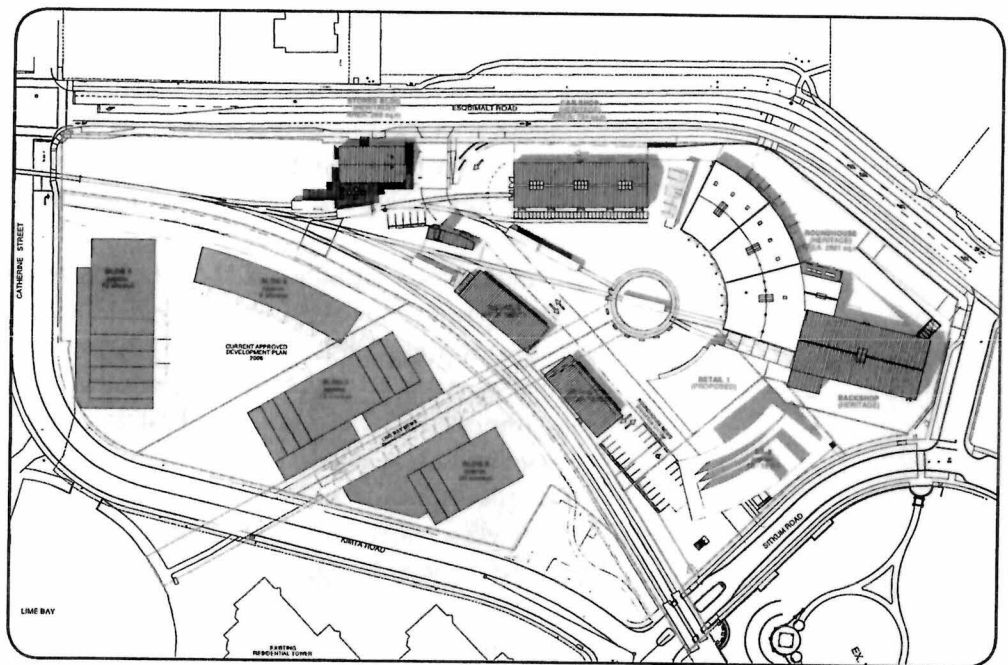
*Roundhouse Massing Concept,  
from Lime Bay*



- Buildings terrace vertically above a pedestrian-scaled podium element. The podium of the residential-hotel building shall be similar in height to the adjacent Roundhouse building; other podiums shall be of similar height to the Roundhouse building.
- Green roofs are encouraged as a means of retaining storm water from smaller storm events and to add visual interest.

Building heights are intended to be as noted on the following Building Height Plan and include buildings of approximately 18-storeys, 23-storeys, 16-storeys and 12-storeys. A mid-rise building form of approximately 6-storeys is located along the south side of the E&N rail corridor.

*Building Height Plan  
Revised 2015*



### **3.4 A Family of Buildings**

Building designs and materials will contribute to the creation of an overall “family of buildings” at Roundhouse; for example, some elements of brick shall be used in all residential or mixed-use buildings to match the material used in the historic Roundhouse structures and the new buildings at the adjacent Bayview development. New infill commercial buildings within the Commercial Heritage Roundhouse Phase (DA-1) are not required to use brick to allow the new buildings to contrast with the heritage buildings. Use of brick on new buildings within DA-2 is encouraged, but not required.

### **3.5 Shadow Analysis**

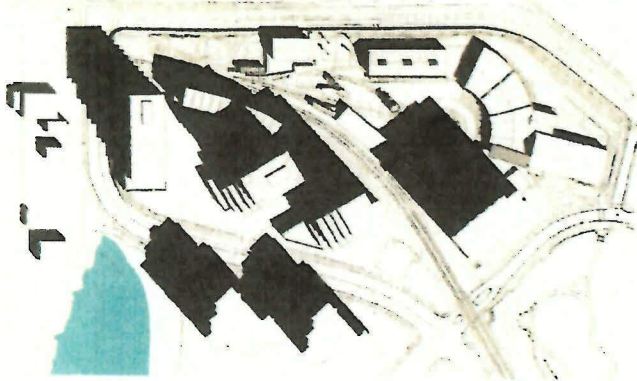
The site plan for Roundhouse has been developed taking into account the travel path of the sun. As much of the new building massing is located to the south of the Roundhouse buildings, with separation from these important heritage buildings, new building forms must remain slim in profile to maximize the extent of sun penetration into the public spaces to the north. The building massing concept for Roundhouse was developed through a comprehensive analysis of the shadow studies to ensure sunlight penetration into the public spaces during high use times and when sun exposure is important to offset cooler temperatures.

The Turntable Plaza, in particular, is most important as a place for people gathering to enjoy outdoor activities.

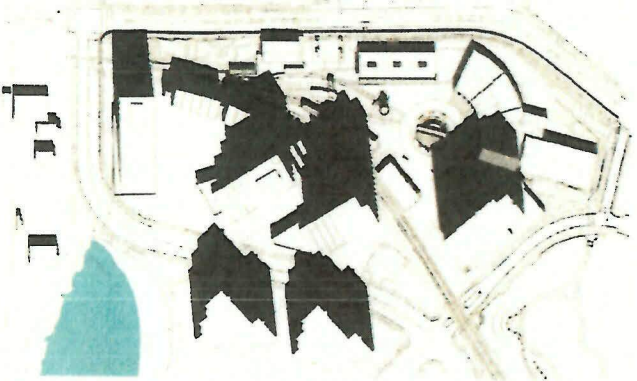
- The overall massing and height of the Roundhouse development shall ensure that the Turntable Plaza has sun exposure during Spring and Fall equinoxes during high use times at mid-day, as shown in the adjacent diagrams.
- It is intended that public seating, including both permanent and movable seating, will occur around the edges of this space. The shadow analysis diagrams prepared for the development indicate that sun will fall into these edge zones at all times of the year if the towers to the south are configured as demonstrated in the conceptual site plan for the project.
- Any adjacent structures or additions to the Car Shop building will be designed to allow sufficient sun exposure in the portion of the Turntable Plaza adjacent to the south facade of the Car Shop, while being respectful of the heritage buildings.
- The design of the residential buildings south of the E&N rail line must be spaced as far apart as possible and remain slim in profile in their east-west axis. The minimum dimension between towers is approximately thirty metres (30 m).

*Shadow Analysis Diagrams*  
*Spring/Fall Equinox*  
*Revised 2015*

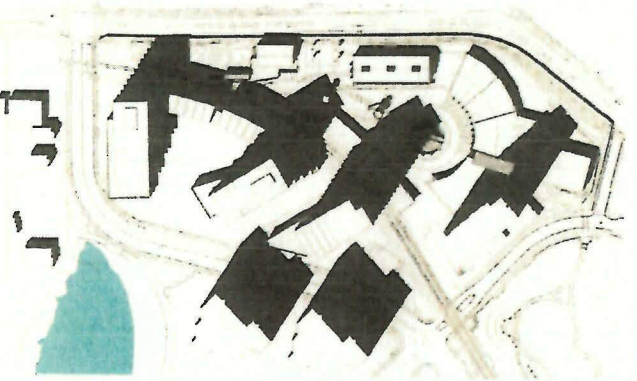
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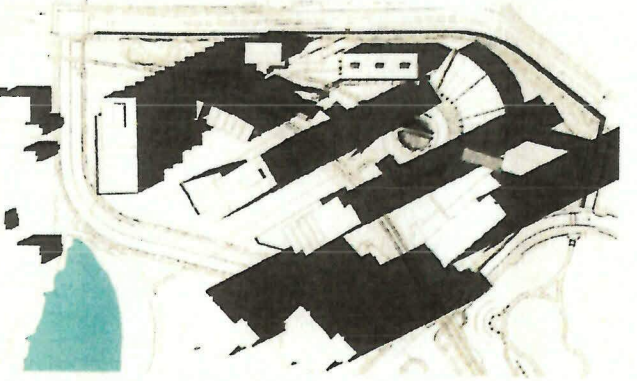
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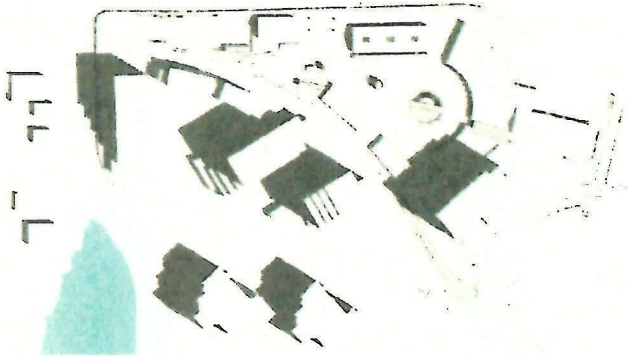


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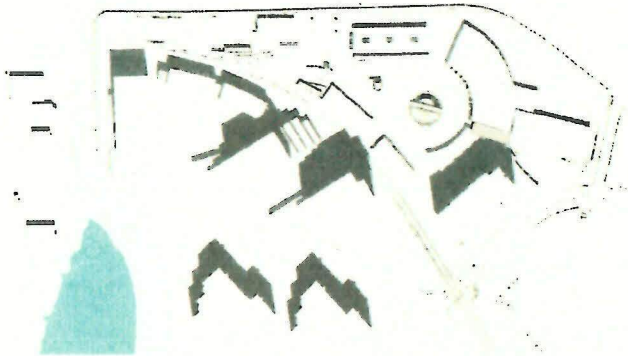


*Shadow Analysis Diagrams*  
*Summer Solstice*  
*Revised 2015*

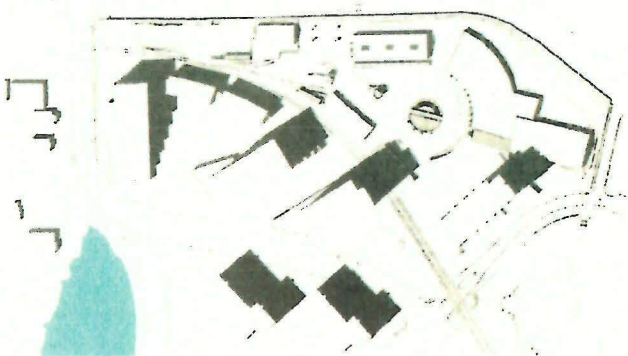
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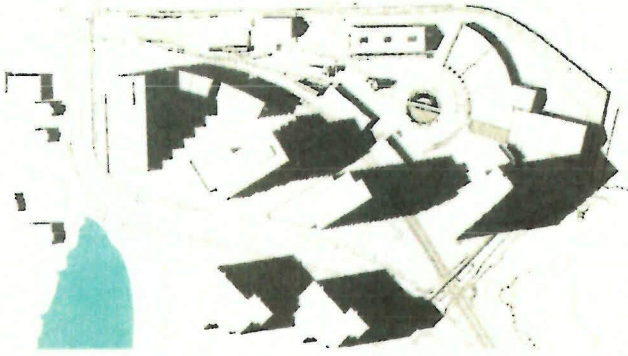
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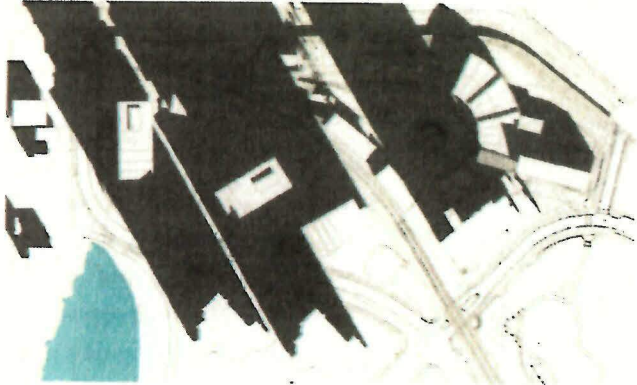


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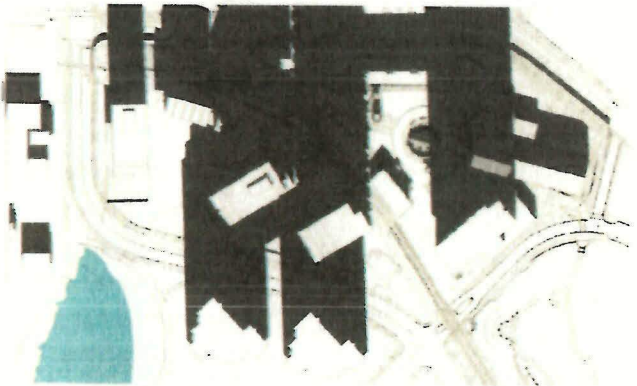


*Shadow Analysis Diagrams*  
*Winter Solstice*  
*Revised 2015*

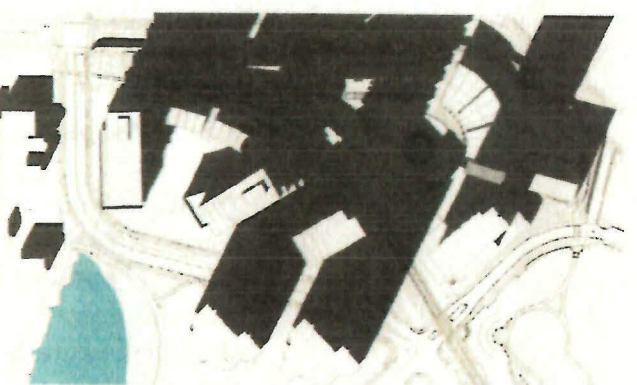
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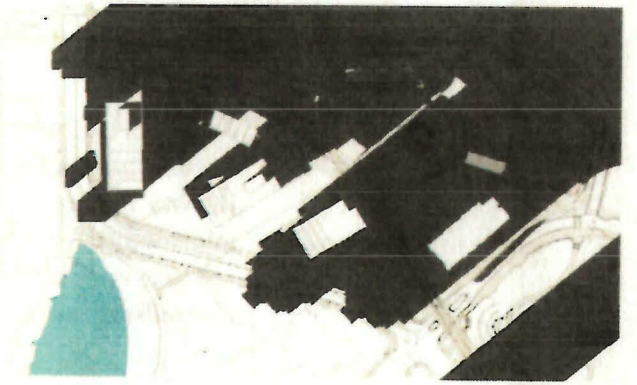
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### **3.6 Residential Livability**

The City of Victoria's Interim Design Guidelines - Development Core Area Residential High Density require the consideration of separation distances from common property lines for building faces, windows and balconies.

- The recommended minimum separation distances are 7.5 metres for living rooms; 4 metres for habitable rooms (bedrooms); 2.5 metres for non-habitable rooms (kitchens, bathrooms, etc.); and, 3.5 metres for balconies.
- Visual screening for adjacent balconies and off-setting adjacent windows may be necessary to further mitigate any privacy impacts.

### **3.7 Building Tops**

Architectural design of building tops will enhance the overall view of the project and the skyline created by new built forms.

- In order to enhance the slim appearance of the higher buildings on the site, floor plates will be reduced in size at upper levels.
- The upper two levels of tower buildings shall step back on the south side a minimum of 3 metres at each floor to create usable roof terraces. Additional setbacks may be considered on the other three sides of these floor plates. As these levels will likely be marketed as penthouse units, greater floor-to-floor heights may be considered for these upper floors.
- A more transparent appearance should be pursued at these floors, using large areas of exterior glazing, to create a distinctive architectural expression at the top of the towers.

### **3.8 Views**

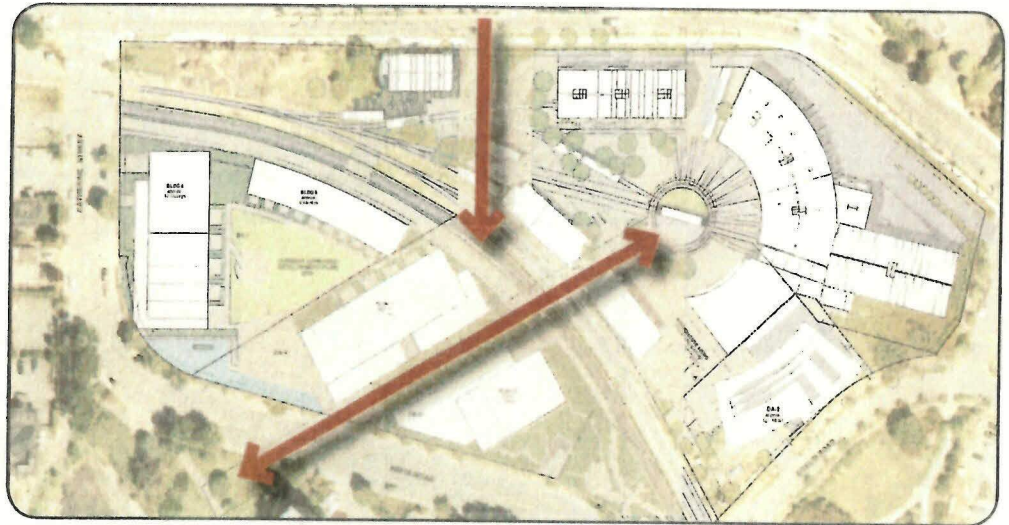
The Roundhouse site is one of the last significant development sites on the Songhees Peninsula and will complement the skyline of this portion of the Inner Harbour. Important views from various vantage points within the Harbour and from upland sites were considered in the master planning for the overall site to introduce height in a sensitive manner. In addition, views from the site, including views to the waterfront at Lime Bay and views over the existing waterfront development to the south, informed the massing plan.

#### *3.8.1 Views from the Site*

An important view corridor along the "Lime Bay Mews" alignment provides a visual connection between the waterfront and the Roundhouse Historic Railway Precinct. The preservation of this view between water and rail informed the entire site plan for Roundhouse. The alignment is critical to creating an understanding of this idea and enhancing the public way-finding for the walking route to the waterfront from the inner area of the site.



*View corridor along “Lime Bay Mews” and “Roundhouse Mews” Street-End View  
Revised 2015*



- The view corridor along “Lime Bay Mews” between the waterfront and the Roundhouse Historic Railway Precinct shall be retained.
- Landscaping along “Lime Bay Mews” will be designed to preserve this important view corridor.

A south-facing “street-end” view at the visual terminus of the main entry roadway, “Roundhouse Mews”, as it bends to follow the alignment of the rail corridor will feature the façade of the mixed-use building.

- This view corridor shall focus on the new signature or landmark building, reflective of the overall site character.
- Development Permit Application for DA-3 should include a southern view along the “Roundhouse Mews” towards the “mews end” and the design of the building facade will consider this important view corridor.
- The view corridor will place an emphasis on the pedestrian experience and the street-level activity of the retail mews, which will have open, transparent facades with high-quality, retail displays.

### 3.8.2 Views to the Site

The City of Victoria identified a number of views for consideration with respect to the Songhees skyline, as modeled in the following view studies.

- The overall massing concept shall create a variation in building heights at Roundhouse from lower buildings in the west to higher buildings in the east.
- Identified vantage points from the harbour and waterfront enable the identification of the massing concept and shall be studied with each Development Permit application.

*View Model at sea level upon arrival to Inner Harbour*



*View Model from Fisherman's Wharf*



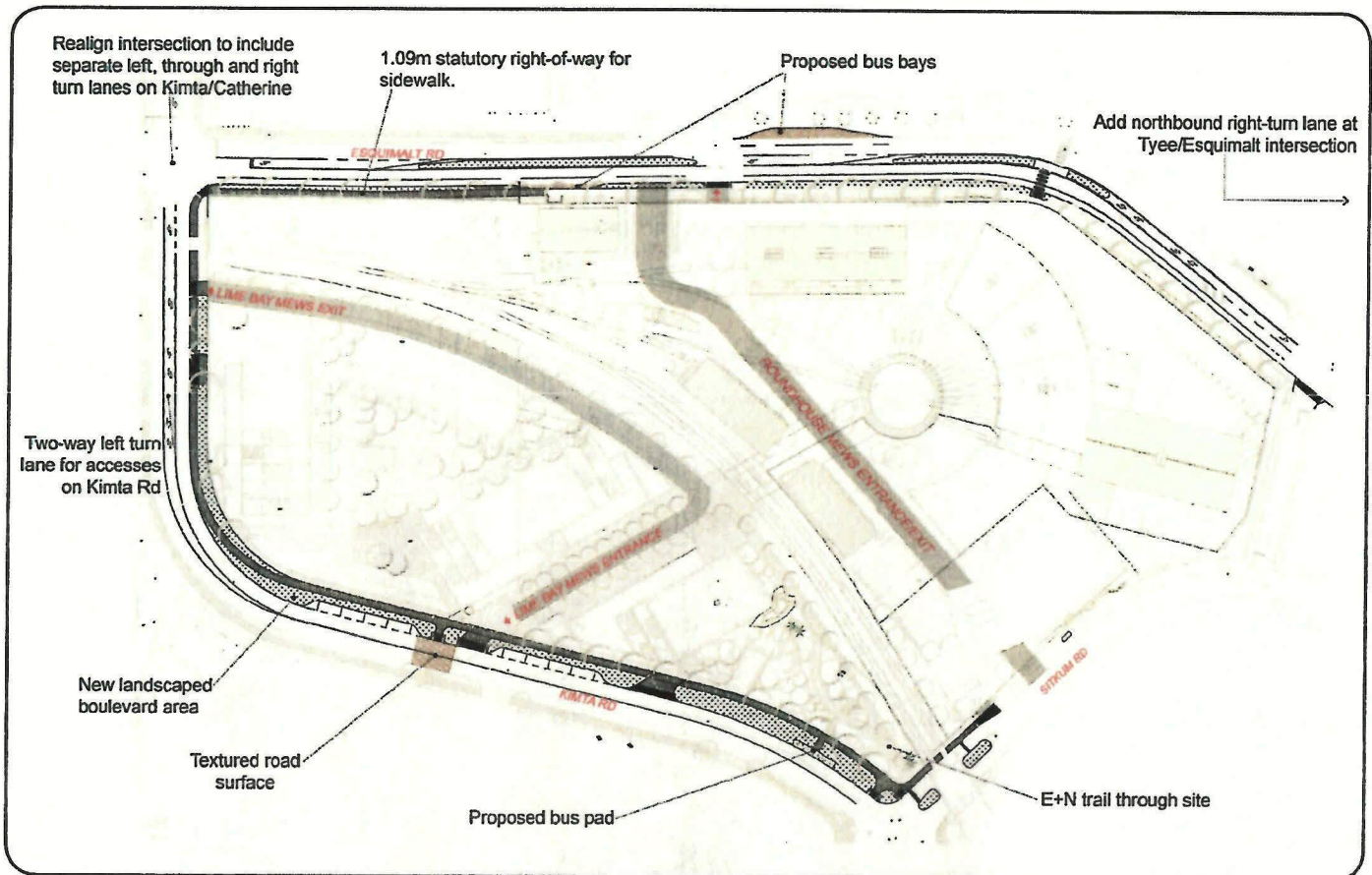
*View Model from Shoal Point*



### 3.9 Site Circulation

#### 3.9.1 Vehicular

Access to the Roundhouse site will be provided along a new publicly-accessible but privately-owned roadway connecting between Esquimalt Road to the north and Sitkum Road to the east. This new “Roundhouse Mews” will travel through the Historic Railway Precinct along the north side of the rail corridor and will serve as one of the primary access routes for visitors to the mixed-use Roundhouse Historic Railway Precinct.



#### *Vehicular Circulation Plan Revised 2015*

- Access to underground parking for public use will be provided from “Roundhouse Mews” to the mixed-use, hotel site.
- Additional access to the site will utilize existing public roads, with intersection enhancements at Esquimalt Road and Catherine Street; at Esquimalt Road and Tye Road; and, at Sitkum Road and Kimta Road to accommodate vehicular traffic.
- The multi-use “Lime Bay Mews” provides for a one-way connection between Kimta Road to the south and Catherine Street to the west. “Lime Bay Mews” will also be a publicly-accessible but privately-owned corridor.
- Servicing and deliveries will be accommodated along “Lime Bay Mews”. Limited surface servicing within the Historic Precinct will be accommodated within the Roundhouse Mews. Design will ensure that

servicing and delivery areas will be compatible with pedestrian activity. There is potential for the creation of a central servicing and distribution area, subject to design review at the Development Permit stage.

- Servicing, deliveries and garbage/recycling facilities within the historic precinct (DA-1) will be located between the heritage designated buildings and Esquimalt Road. Servicing, deliveries and garbage/recycling facilities for DA-2 shall be predominantly provided within the underground parking structure beneath the residential-hotel. Garbage and recycling facilities for residential uses (DA-3, DA-4, DA-5) will be located within the underground parking areas of each building.
- Servicing will be subject to time-restrictions so as not to conflict with public use of the outdoor space.

### 3.9.2 Pedestrian/Cyclist

Community linkages are important elements of the overall site plan, reinforcing the concept of Roundhouse being a focus for the Songhees neighbourhood and Victoria West community.

Community Linkages Diagram



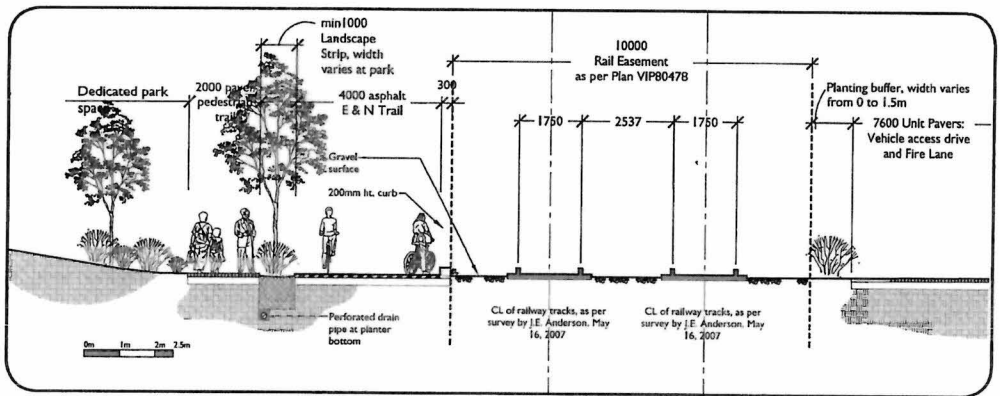
- A high-quality, public realm will be provided along all roads within the site and along its perimeter.
- A key pedestrian corridor will be provided between the Roundhouse Historic Railway Precinct and the waterfront at Lime Bay. This diagonal alignment will enable sightlines to both visually and physically connect the heritage Roundhouse buildings to the waterfront and will serve to enhance

access to the public focus at the centre of the site. “Lime Bay Mews”, as a multi-use and service route, will be a pedestrian and cyclist-first corridor and shall be designed as a high-quality, pedestrian-scaled street.

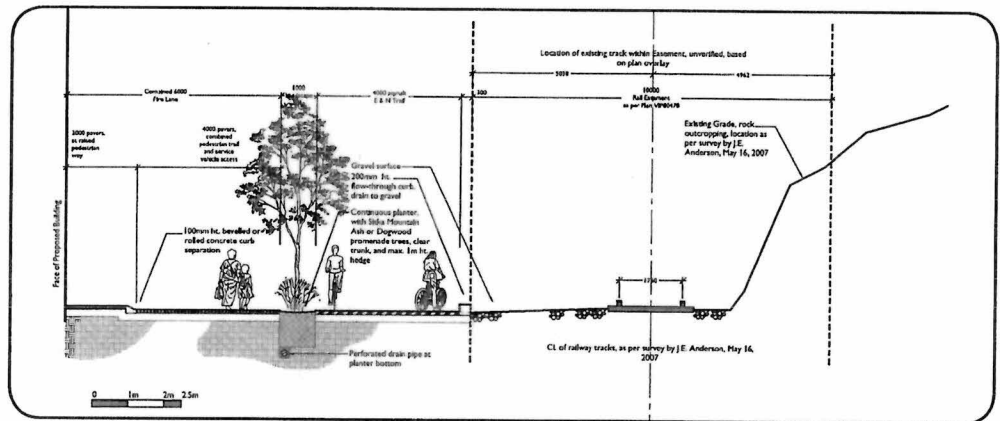
- The E&N Rail Trail will be developed along the south side of the E&N rail tracks as they travel through the site. This trail corridor is an important regional facility that will serve as a commuter and recreational trail, accommodating pedestrians, cyclists and rolling users (rollerblading, strollers, wheelchairs, etc).

The following illustrative section plans depict the E&N Rail Trail facility through the Roundhouse site, which will be subject to detailed design and approval by the City of Victoria.

*E&N Rail Trail Section Diagram for portion adjacent to City Park at Kimta and Sitkum*

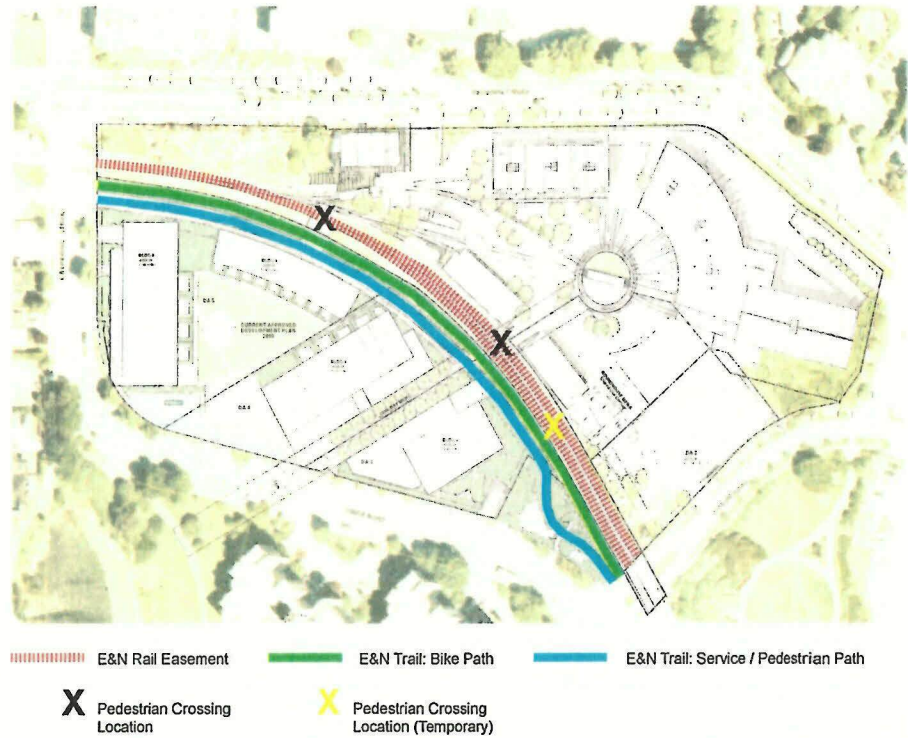


*E&N Rail Trail Section Diagram for portion adjacent to Live/Work development and Lime Bay Mews*



- The E&N Rail Trail shared-use facility will be provided to the City of Victoria as a key public amenity of the project.
- Pedestrian crossings over the E&N tracks will occur at the alignment of “Lime Bay Mews” (replacing the existing vehicular and pedestrian crossing) and a second near the west end of the Stores Building, as generally shown on the following diagram. These crossings are in addition to those provided at Catherine Street and Sitkum Road. An additional temporary pedestrian crossing may be installed to provide access to and from the temporary surface parking area that will serve the first commercial phase of development at DA-1, subject to the necessary approvals from regulatory agencies with authority to govern rail crossings.

**E&N Rail Trail, Pedestrian  
Crossing Locations  
Revised 2015**



**3.9.3 Rail**

The E&N Rail corridor is anticipated to remain as an active transportation corridor through the site and linking to downtown Victoria and is an important public amenity for the city and the region.

Planning for the future use of the rail corridor is underway by the Island Corridor Foundation and transportation stakeholders and could include future commuter rail service to the western communities, passenger excursion service up island, light rail service, heavy rail service or other rail-based transportation use.

- A new “Russell’s Station” could be located on the site to serve as a transportation stop along the corridor, serving the Victoria West and Songhees neighbourhoods.

Site planning for Roundhouse accommodates the ongoing transportation use of the rail corridor.

- A minimum right-of-way of ten metres will be retained through the site.
- Separation between the rail corridor and adjacent pedestrian, cyclist or vehicular circulation routes shall be provided through the use of bollards, special paving materials and level changes.
- Solid and/or continuous fencing is not desirable through the Roundhouse Site.

## **3.10 Parking**

### *3.10.1 Surface Parking*

A limited amount of surface parking will be provided on-site. Surface parking for convenience within the Historic Railway Precinct is intended to serve the commercial uses.

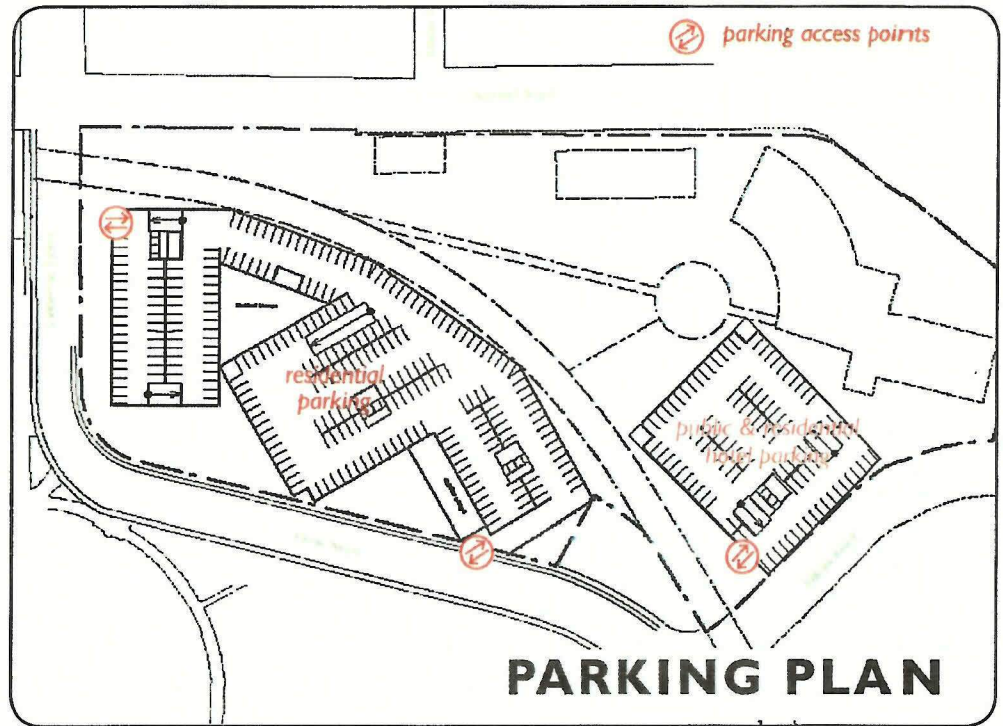
- These surface parking areas will be surfaced with brick or unit pavers to be consistent with the pedestrian-friendly and heritage character of the precinct.
- Surface parking will not be permitted within Turntable Plaza.
- Surface parking areas located within a servicing area may be surfaced with asphalt to provide a durable surface.
- Temporary surface parking for the Commercial Heritage Roundhouse Phase may be surfaced in asphalt.

### *3.10.2 Underground Parking Structures*

The majority of the parking for the project is to be located underground in structures below buildings and open spaces.

- Temporary surface parking for the Commercial Heritage Roundhouse Phase may be accommodated on adjacent Development Areas until the underground parking facility on DA-2 is constructed.
- Underground parking structures that are proposed to extend above grade in the case of sloping terrain may be considered. However, Development Permit Applications must demonstrate that such projections do not negatively impact the pedestrian environment or result in long, blank walls along streets and pedestrian use areas. Architectural treatments and screening to mitigate the impact of such projections may include, but are not limited to the following:
  - The grade is bermed against the wall;
  - Climbing plants are selected to create a greening of the wall;
  - Quality materials are selected for the wall finish, including architectural concrete or brick.

## Underground Parking Plan



### 3.10.3 Access to Underground Parking

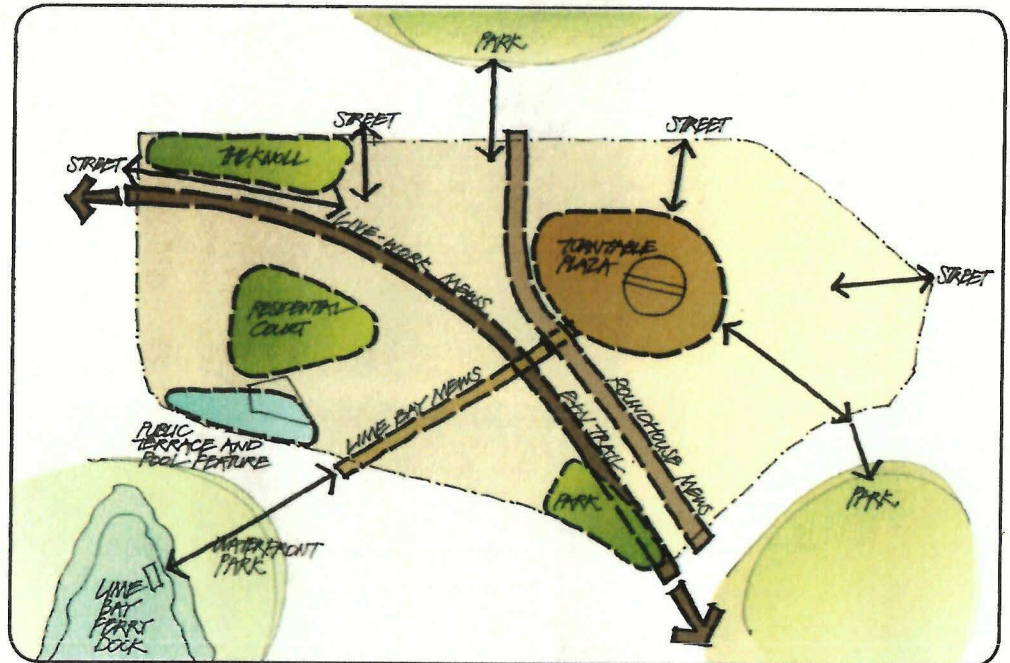
- The design of underground parking accesses and underground parking areas must take into consideration CPTED principles.
- Access ramps should be located perpendicular to streets, not parallel. In the event parallel access ramps are proposed, it must be demonstrated that such accesses do not negatively impact the pedestrian experience along sidewalks and mews and that designs incorporate landscaping or screening.
- Entry security gates shall be utilized for resident parking areas.
- Elevator/stairway cores within the underground parking area shall be designed with glazing and sufficient lighting for enhanced visibility.



### 3.11 Landscaping + Public Realm

A number of public and private areas will be enhanced through site landscaping.

Open Space Framework Plan



#### 3.11.1 Turntable Plaza

The Plaza, incorporating the historic Turntable, will be generally shaped by the semi-circular Roundhouse building along its eastern flank and will extend to the Car Shop in the north, and be bound by Roundhouse Mews in the west and south.

- The Plaza will be an active space supporting a multitude of outdoor events, both programmed and spontaneous. As such, the plaza will be expressed as a “working yard”, with a concrete unit paver surface inlaid with flush rail trackage.
- There will be few trees within this historic zone surrounding the Turntable.
- An overlay of contemporary finishes, including furniture and site lighting, will be included to reflect its use as an adaptive space, encouraging people to gather and linger, and encouraging a lively edge. It will include railway artifacts and interpretive opportunities within the plaza.

*Example Public Realm Plaza  
Treatments*



### *3.11.2 The Knoll*

The Knoll is the rock outcrop at the northwest corner of the property.

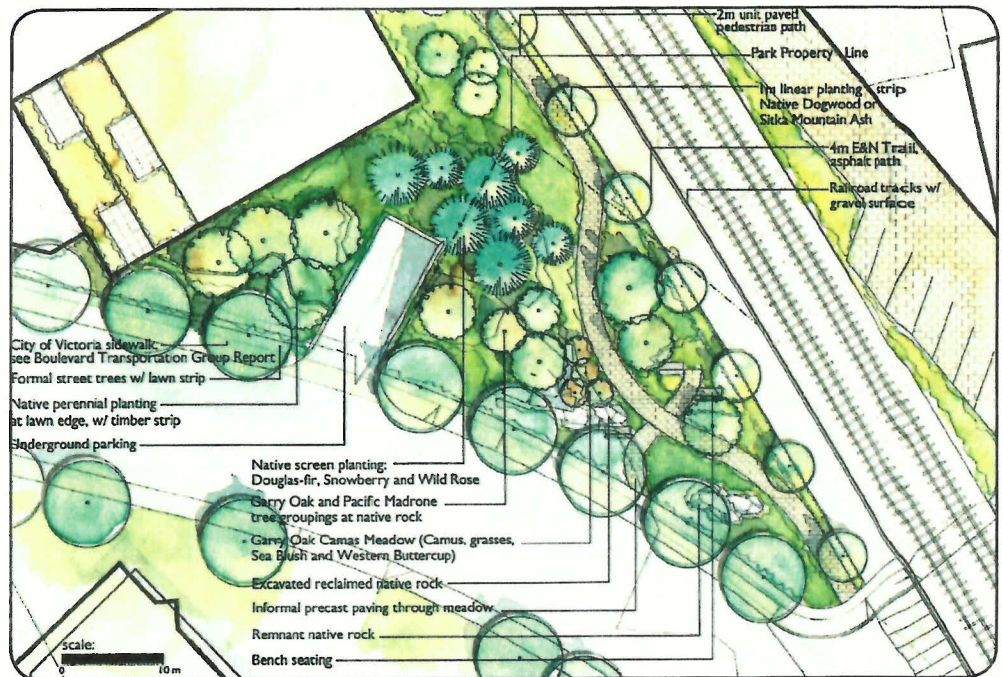
- The Knoll will be preserved as a natural feature and visual amenity in the landscape with some infilling of native plant materials to encourage the Garry Oak - Camas meadow, including Garry Oak saplings, Oceanspray, ferns, mosses, grasses and lichens. The Knoll is not intended for active public use.

### *3.11.3 Residential Court*

Residential livability will be enhanced through the development of a network of semi-private courtyards and open spaces.

- Courtyard spaces are intended to be usable by building residents as communal outdoor spaces and will be landscaped.
- Ground floor private patios with gardens will be provided and screened from semi-private and public areas by planting.

## Illustrative Landscape Plan for City Park



### 3.11.4 The City Park

Located at the southeast corner of the property, the City-owned park will be landscaped as a natural feature as a contribution to the public realm.

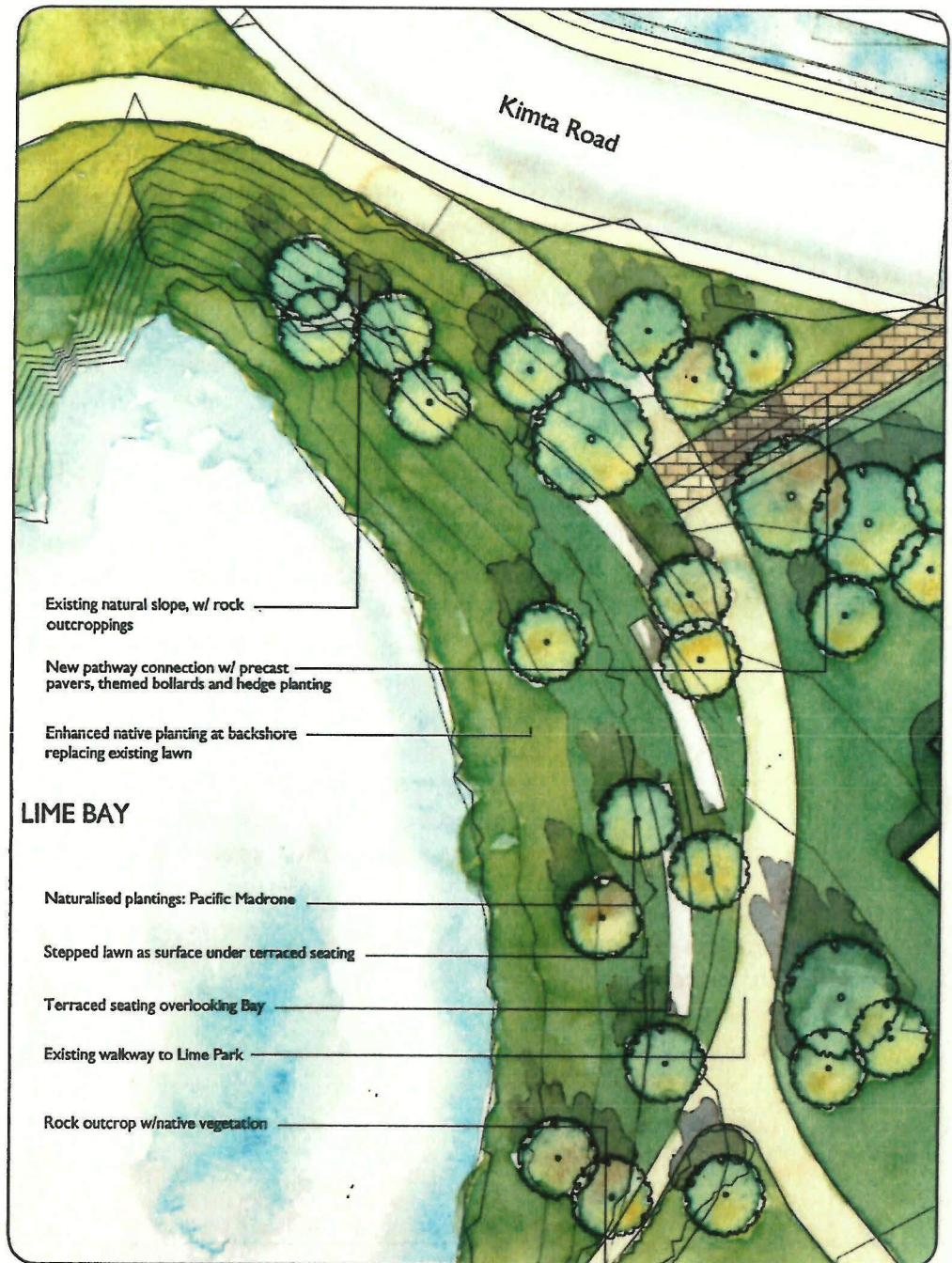
- Native plantings and large segments of rock stacked to create topography in the park will add a visual feature at the curve in Kimta Road and the point where the E&N Rail Trail enters the Roundhouse site. As such, it performs as an important gateway.
- The relationship between the City Park and the adjacent residential building will be enhanced through plantings and landscape features that screen the public space from the underground parking access driveway. Particular attention to the CPTED guidelines will apply to this landscape screening.

### 3.11.5 Lime Bay Park

Lime Bay Park is an existing City park area surrounding Lime Bay, which connects to the Songhees waterfront along the Westsongway waterfront trail. The park is accessed from the Roundhouse via the Lime Bay Mews across Kimta Road.

- The visual connection between the waterfront and Turntable Plaza will be emphasized by extending special paving across the roadway, and providing mews treatment along the axis to the turntable.
- The edges of Lime Bay are steeply sloping and the landscape strategy will be one of reinforcing the natural environment of the coast through the use of indigenous plant materials, rock and sea grasses.

*Illustrative Concept Plan for  
Lime Bay Park*



- At the upper portion of the slope, terraced seating will be provided, capitalizing on views, and providing a resting point along the existing public Westsongway waterfront trail.

**3.11.6 Managing Stormwater**

- The landscape will incorporate sustainable stormwater practices, including bioswales, and permeable paving at street-side parking.

### 3.12 Railway + Site Interpretation

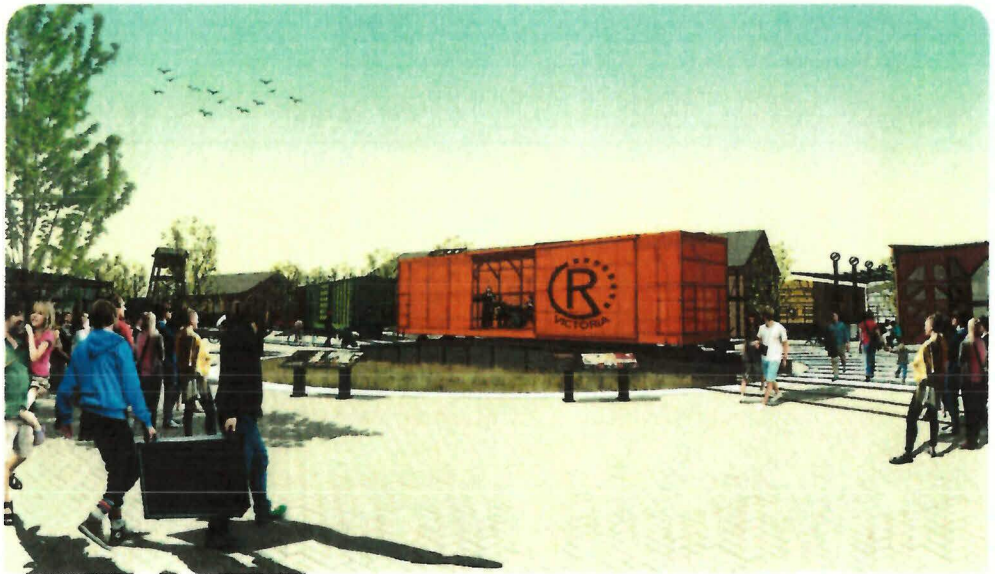
The historic railway use on this site and within the Roundhouse buildings will be celebrated through the interpretation of the E&N Railway history, located primarily within the Historic Precinct. There is potential for interpretive elements to be included on other Development Areas of the overall site to create an integrated public realm for the project.

Railway tracks are intended to be retained within the plaza; railway artifacts as features within the landscape are intended to celebrate site history; and, ongoing railway use and maintenance are intended to be accommodated on site.

Interpretive elements are mandatory design features in accordance with the Master Development Agreement and to the satisfaction of the Director of Planning. Development Permit Applications for the Historic Precinct will include interpretive elements that may include and are not limited to the following examples:

- Rebuild some signature structures, such as the water tower and the sand tower (to provide impressive scale and thematic reference).
- Bring onto the site a selected amount of rolling stock: either for display, such as one of the 4000 series diesel engines or a caboose, or for adaptive reuse as retail shops or cafes.
- Develop a small-scale restoration shop for use by a cooperating not-for-profit agency like the Canadian Railroad Historical Association to operate.

*Opportunities for Site Interpretation: boxcar stage on functioning Turntable and railway history display boards  
Revised 2015*

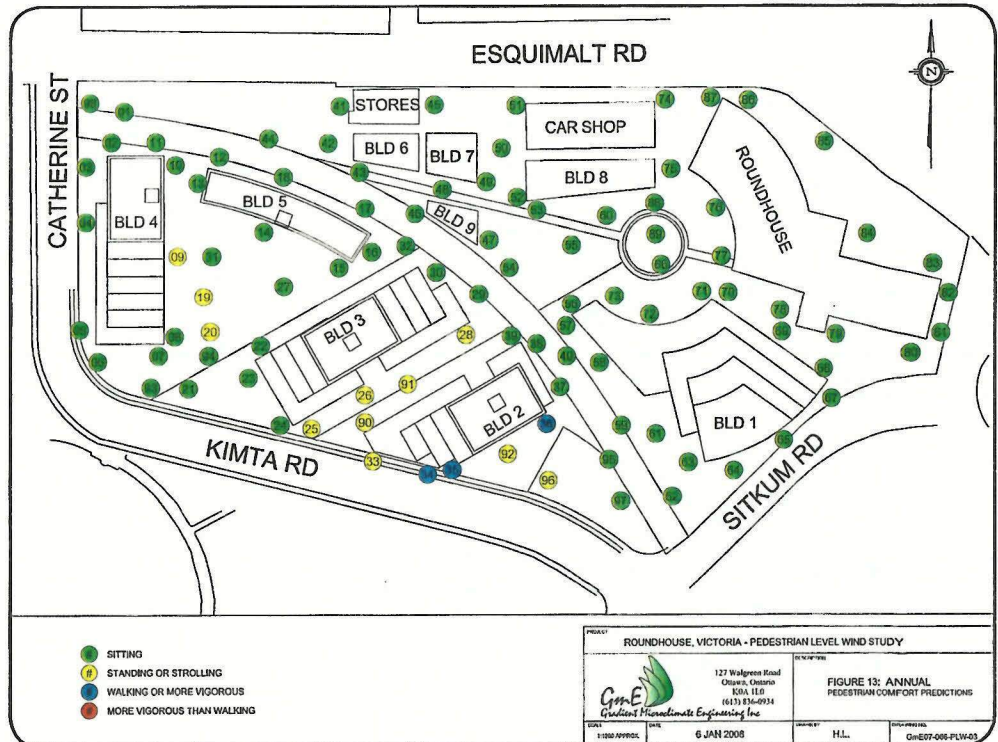


- Create possibility for public to see the Dayliner at rest and being maintained.
- Use the operational tracks that run through the site as a resource to be interpreted as to current and possible future use.
- Install some smaller artifacts, from a railroad speeder to hand tools, to dress selected areas of the site and buildings.
- Create sculptural installation to echo the people and events of the past.
- Use large scale graphics to provide backdrops and sets for other activities.
- Create smaller interpretive graphic panels to tell stories in a compact format and install in non-intrusive but easily located places.
- Use the turntable as a focus feature in the main plaza. Animate it as a special event (e.g. rotating at specific times on the weekends and on holidays).
- Recreated site landmarks: water tower, sand tower, signals.
- Design artifacts and interpretive features to be welcoming and engaging for all age groups including interactive opportunities for children.

### 3.13 Wind Assessment

An independent report by Gradient Microclimate Engineering (GME) has been prepared to assess the climatic conditions in a post-development context. The report indicates that pedestrian wind conditions at grade are generally calm and suited to the intended use of most public areas and pedestrian pathways linking various destinations. However, depending on the specific intended uses, mitigation may be appropriate for one or more areas.

#### Pedestrian Comfort Analysis



The windiest locations on the current site occur along the Lime Bay Mews corridor between Buildings 2 and 3; along the south corner and southeast elevation of the Building 2; and, along the west side of Building 4 and over part of the residential courtyard. In accordance with the findings of the GME Pedestrian Level Wind Study, the following guidelines are provided:

- Wind mitigation shall be provided for the pedestrian corridor between Buildings 2 and 3.
- Wind mitigation may be considered for the south corner and southeast elevation of Building 2, and along the west side of Building 4 and over part of the residential courtyard.
- Mitigation options may include and are not limited to the provision of mixed coniferous and deciduous plantings, overhead canopies and architectural screens placed along the path of travel.

The GME Pedestrian Comfort Analysis executive summary is in Appendix A.I.



### **3.14 Noise Abatement**

There are three sources of noise that will impact the development: harbour aircraft, on-going railway operations, and the vehicular traffic on Esquimalt Road. Buildings that face in the direction of these noise sources shall be designed according to industry standards like the CMHC guidelines for housing construction adjacent to railways.

- Noise mitigation strategies shall be addressed in the Development Permit Application and in accordance with the Master Development Agreement.
- Development Permit Applications will require an opinion of the chosen noise mitigation method by a professional certified in acoustics measurement and analysis or by the architect for the development.
- Strategies may include and are not limited to increased wall mass and updated window and door systems.

### **3.15 Crime Prevention Through Environmental Design (CPTED)**

The approach taken to ensure that CPTED principles are met in the project includes the following:

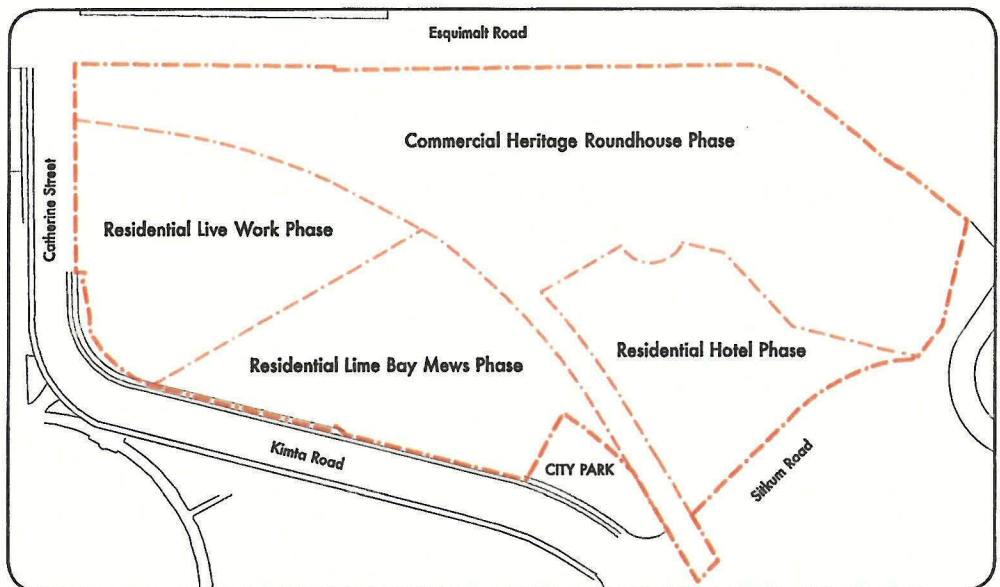
- mixed use with public-oriented activity on the ground floor of buildings
- people living above to monitor the area twenty-four hours a day
- avoidance of low, heavy plantings adjacent to public use areas to prevent potential entrapment areas
- unimpeded sightlines through pedestrian mews
- adequate night lighting

### 3.16 Phased Development

The site will be developed in several phases, as generally outlined in the following phasing diagram.

- It is expected that the first phase of development may include the Commercial Heritage Roundhouse Phase or one of the Residential phases south of the railway tracks or the Residential Hotel Phase.
- Subsequent phases will be staged to follow the schematic plan as outlined. The surrounding streets will also be improved in sequence with the development phasing.

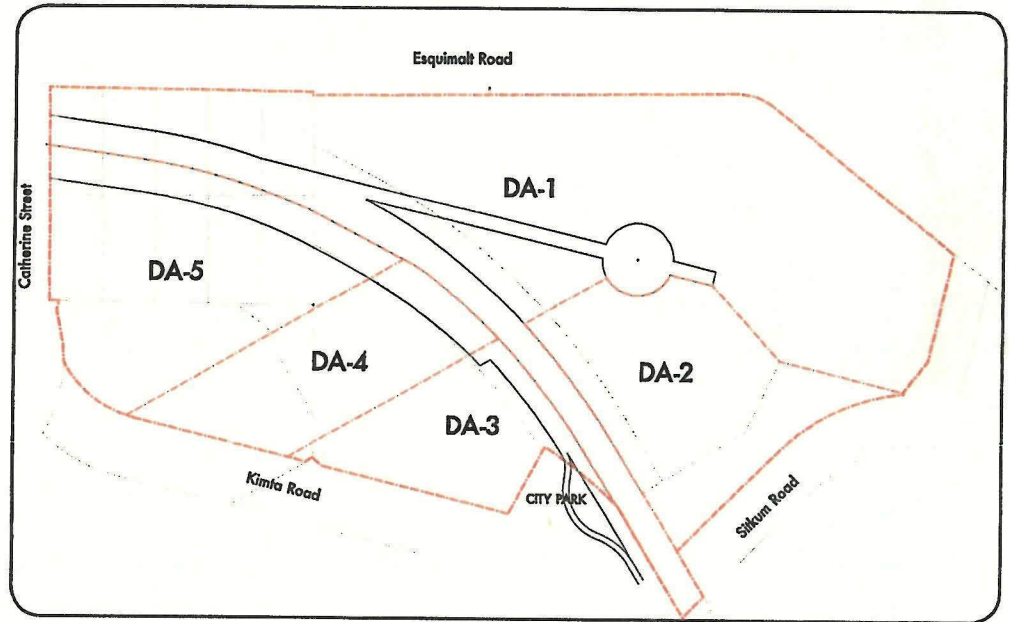
*Site Phasing Plan*



#### 4.0 DEVELOPMENT AREA GUIDELINES

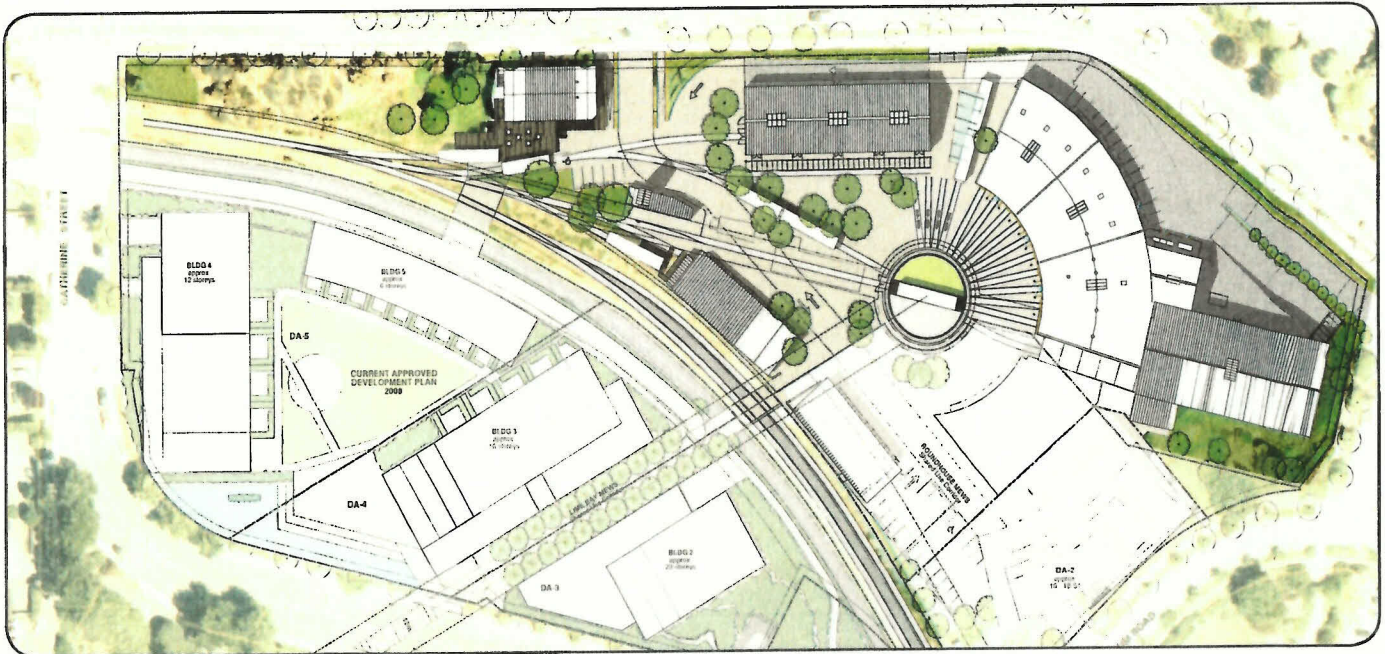
The following diagram depicts the division of the Roundhouse site into individual Development Areas (DA) that will be used to describe and guide future development. Each Development Area has a specific character and development concept, as described in the following sections. These Development Area Guidelines should be considered in conjunction with the Comprehensive Development (CD) zone for the project.

*Development Area Plan*



## 4.1

## DA-1 – Roundhouse Historic Railway Precinct



### Revised 2015 Intent:

This sub-area will be a centerpiece in Canada for railway heritage. Existing heritage buildings will be conserved. Rail artifacts will be installed throughout the precinct as public art. On-going rail operations may occur utilizing easements for the E&N line and access to the turntable.

**Building Form:** Existing buildings will be retained as one storey structures and conserved by applying the best practices for heritage conservation as established by the federal government and the City of Victoria.

New building spaces will be added to the precinct to reduce the large scale of the precinct and to animate Turntable Plaza, the central public open space in the Roundhouse development.

New buildings will be one storey, contemporary structures to contrast with the heritage buildings on the site.

New buildings or structures will not be permitted within the area between the Roundhouse building and Esquimalt Road, except for consideration of re-purposed rail cars and related structures required for access.

## Architectural

**Character:** Any development on the Historic Precinct site must respect the heritage character of the historic railway buildings. These buildings are characterized by red brick exteriors, the use of large wooden doors, and tall multi-paned windows. Renovations to the interiors of these buildings for new uses shall respect these basic elements of the exterior wall fabric.

Outdoor retailing using kiosks, re-purposed rail cars, or under-canopy structures is encouraged in the precinct.

A dynamic and animated streetscape shall be created along the Esquimalt Road frontage behind the Backshop. The utilization of re-purposed rail cars may be considered to help achieve streetscape character. New buildings / structures in this area should be limited to ramps or platforms necessary to provide access to the rail cars and shall be designed to be sensitive and compatible with the heritage buildings.

New buildings on the site should be designed with a contemporary appearance. It is anticipated that they will be built from structural steel or heavy timber with exterior walls made of glass and metal panel siding where solid areas are required. The overall appearance of these buildings should be very light and transparent as a contrast to the heavy historic structures.

New buildings should relate to the pedestrian scale.

New buildings or structures south of the Car Shop shall be designed according to the following criteria:

- Buildings or structures south of the Car Shop will provide definition of the Turntable Plaza space.
- Buildings or structures will ensure that a portion of the south elevation of the Car Shop is exposed to permit visibility of the heritage facade and allow more sun exposed area to pedestrians. Active, public-oriented uses are encouraged in this area, with outdoor seating to take advantage of the sunny location on the site.
- Buildings or structures are encouraged to be transparent in materials.

## Landscape

Character: The landscape of the Historic Precinct should evoke feelings of an operating rail yard.

The use of trees should be limited to the perimeter of the site where they form part of the streetscape rather than part of the precinct.

A naturalized landscape, utilizing the indigenous trees and plantings of the Victoria area, as can be seen on various parts of the existing site, is the appropriate approach in the railway precinct.

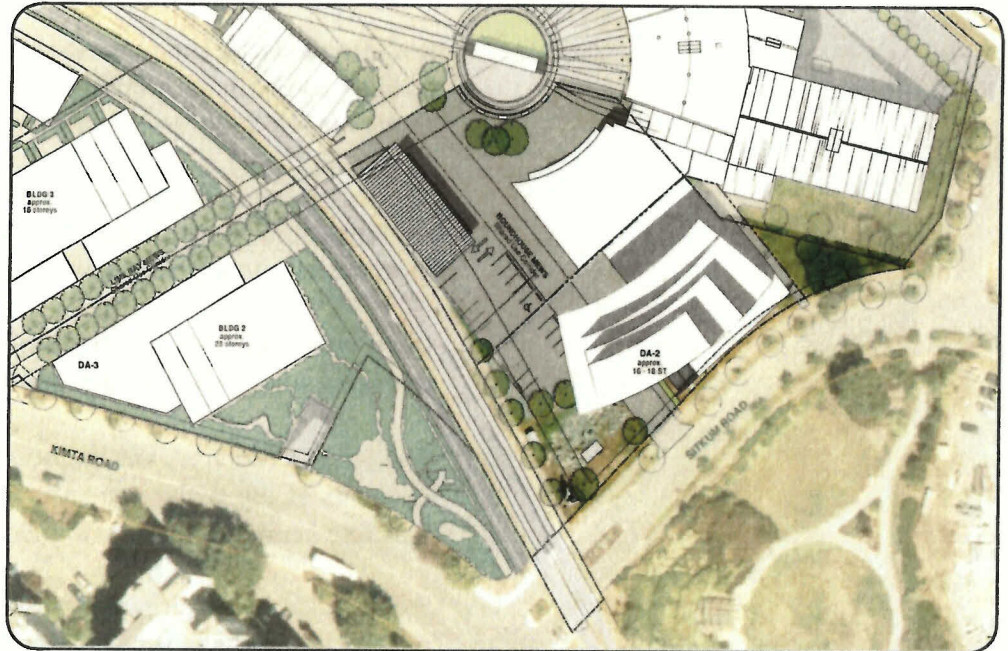
## Railway

Interpretation: A comprehensive interpretation concept and design has been prepared for the Historic Railway Precinct and is found under separate cover in the report entitled "Roundhouse Celebrating Our Heritage, Interpretive Approach for the Roundhouse Railway Heritage Site and Residential Community", May 2008.

Specific guidelines for interpretive elements are contained in a separate section of this design guidelines document and will be applied to this DA.

## 4.2 DA-2 Mixed-Use / Residential Hotel

Revised 2015



**Intent:** This sub-area is intended to house an extended-stay, residential hotel with conference facilities, retail and office space. Underground parking will be included for the general public to serve the needs of the functions located in the Historic Precinct.

**Building Form:**

Building massing shall be shaped to reflect the curvature of the Roundhouse building and to help define the public gathering space of the Turntable Plaza within the Historic Precinct.

The plan of the hotel will be curvilinear, following the radius centre-point of the Turntable.

The building will have a podium base of a similar height to the Roundhouse building. The retail ground floor of the podium will align exactly with the radius of the south wall of the Roundhouse. The second and third floors, housing office and conference space, will terrace upwards and away from the plaza and the Roundhouse, as the base floors of the tower component.

Above the podium, the building may further terrace. It is intended that terracing of this mid-section of the building as it transitions from the podium to the tower may occur in increments of approximately three floors. The upper two floors of the tower will reduce in floor area on at least the northeast edge to further capture the terraced concept.

## Architectural

**Character:** It is intended that the hotel tower be grounded with a podium building constructed primarily of brick walls and columns, aluminum windows, and glass or wood doors.

The architectural expression of this building will be contemporary in nature to contrast with the historic railway buildings on the adjacent site.

Large glass areas will accommodate the outstanding views from the site towards the harbour and Olympic Mountains.

The project red brick will be included, particularly in the podium elements of the project, to ensure the ongoing “family of buildings” concept for the Roundhouse Project.

Steel should be employed as an exterior finish material, particularly in the lower levels of the building, for fascias, canopies, trellises and storefront separations to extend the materials and colours of the Historic Precinct.

The service areas of the residential-hotel, located along the southern face of the building, should be designed in a way to soften the impact of the entrance to the public underground parking garage and the service docks. The use of glazed, overhead doors and overhead trellises can achieve this effect.

The ground level façade along the east face of the project should be designed in a way to reflect the sloping topography such that individual storefront entrances are terraced to provide direct access from sidewalk level.

## Landscape

**Character:** The landscape features of this site will be minimal on those edges that form part of the Historic Precinct and consistent with the perimeter streetscape character on those edges that are bordered by roads.

Any landscaping along the E&N Railway easement will be low-level plantings utilizing indigenous plant species.



### 4.3 DA-3 Residential with Retail at Grade

Revised 2015



**Intent:** This sub-area is intended to accommodate residential apartments with retail use on the ground floor and underground parking for visitors and residents.

**Building Form:** A pedestrian-scaled podium of similar height to the Roundhouse will surround the tower component.

The ground floor will introduce small-scale retail frontages along the edge of Lime Bay Mews with a high degree of pedestrian animation.

The tower component will be a slim profile. Above the podium, the building will terrace. It is intended that terracing of this mid-section of the building as it transitions from the podium to the tower may occur in increments of approximately three floors.

**Architectural Character:** The tower in DA-3 is on the axis of the new Roundhouse Mews and will be the tallest building on site. As such, the design of this building will be important when viewed from Esquimalt Road and Victoria West Park. Therefore, the tower should be designed with a corner articulation that recognizes this special condition.

Development Permit Application for DA-3 should include a southern view along the “Roundhouse Mews” towards the “mews end” and the design of the building facade will consider this important view corridor.

At the top of the tower, consideration should be given to a unique feature for this landmark building, such as a glass element above the last habitable floor, with lantern-like night lighting.

The design of this building will reflect the use of brick, at a minimum, at the podium level, with large areas of glass in the upper tower floors.

The ground level of the project, facing Lime Bay Mews, is intended to be designed as pedestrian-oriented, with shop front diversity through a number of narrow storefronts, maximizing transparency through large glass areas. Projecting retail signage and colourful fabric awnings are intended to add to the animation of the Mews.

Facades at the ground floor will acknowledge the public open space with patios, window overlooks and other urban features designed for the interest and security of members of the public using the adjacent public space. Building facades along public streets, including Kimta Road, shall be designed to be pedestrian-oriented to relate to the public sidewalk.

Landscape  
Character:

This site faces Kimta Road and will exhibit a landscape character along the south edge that is consistent with its streetscape design. To the east of the site is the City of Victoria public park that will be developed with a naturalized landscape. This same landscape strategy should be utilized in the open spaces on the east and southeast edges of the site. In particular, the ramp to the underground parking should be screened with landscaping.

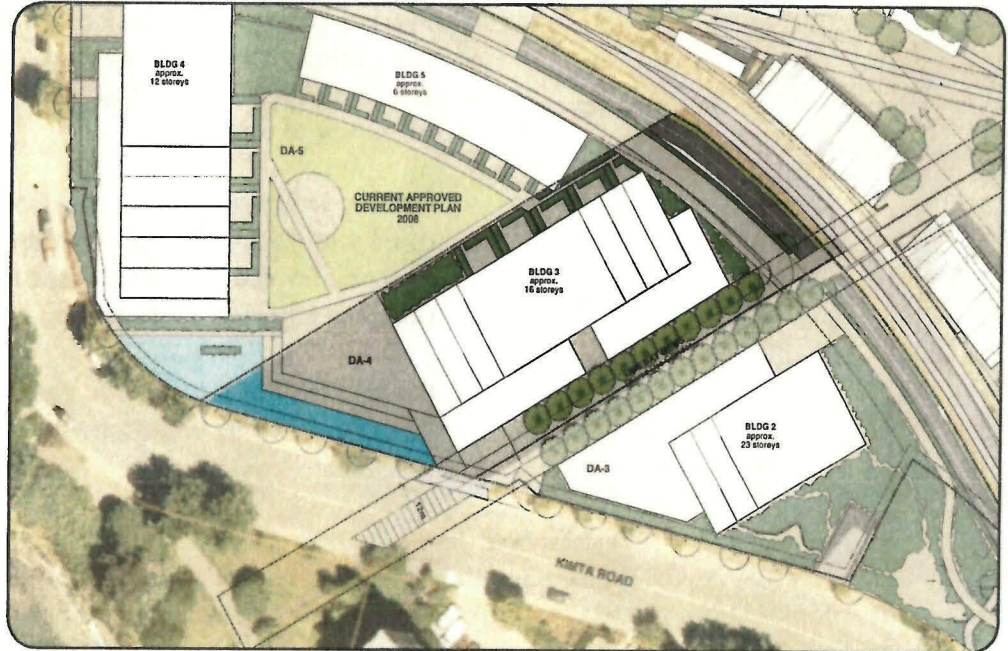
Streetscapes along public roads will minimize service/utility functions and parking facilities, blank building walls and solid fencing.

The E&N Trail by-passes the northern edge of this site as a seven metre wide public pathway for pedestrians and cyclists.

Lime Bay Mews is located to the west of the site and will be treated in a manner that is in keeping with a pedestrian mews with features such as street tree planting and street furniture. Vehicular access will be allowed to this space on a limited basis for service vehicles. The design of the mews will be curb-less, with drainage to the centre line of the space, and unit pavers from wall to wall.

## 4.4 DA-4 Residential with Retail at Grade

Revised 2015



**Intent:** This sub-area is intended to accommodate residential apartments with retail use on the ground floor and underground parking.

**Building Form:** This mixed use residential site will provide a pedestrian-scaled podium surrounding the tower component. The ground floor will introduce small-scale retail frontages along the edge of Lime Bay Mews with a high degree of pedestrian animation.

The tower component will be a slim profile. Above the podium, the building will terrace back from both the south and north sides. It is intended that terracing of this mid-section of the building as it transitions from the podium to the tower may occur in increments of approximately three floors.

It is intended that two floors at the top of the tower will terrace back from the south side.

**Architectural Character:** The design of this building will reflect the use of brick, at a minimum, at the podium level, with large areas of glass in the upper tower floors.

It is intended that the tower be grounded with a podium constructed of brick walls and columns, aluminum windows, and glass or wood doors. This podium will be similar in scale to the height of the existing Roundhouse building.

The ground level of the project, facing Lime Bay Mews, is intended to be designed as pedestrian-oriented, with shop front diversity through a number of narrow storefronts, maximizing transparency through large glass areas. Projecting retail signage and colourful fabric awnings are intended to add to the animation of the Mews.

Facades at the ground floor will acknowledge the public open space with patios, window overlooks and other urban features designed for the interest and security of members of the public using the adjacent public space.

Building facades along public streets, including Kimta Road, shall be designed to be pedestrian-oriented to relate to the public sidewalk.

#### Landscape

##### Character:

The south face of this site will be developed to accommodate a restaurant at grade with an outdoor terrace for restaurant patrons and a water feature, offering an amenity for pedestrians to experience along Catherine Street and Kimta Road sidewalks. The water feature is intended to recall the former extent of Lime Bay in a contemporary interpretation.

Due to the level change within the site, the terrace will be elevated above street level which will afford an opportunity for moving water within the water feature.

The terrace will be of a scale compatible with the pedestrian experience on the adjacent street.

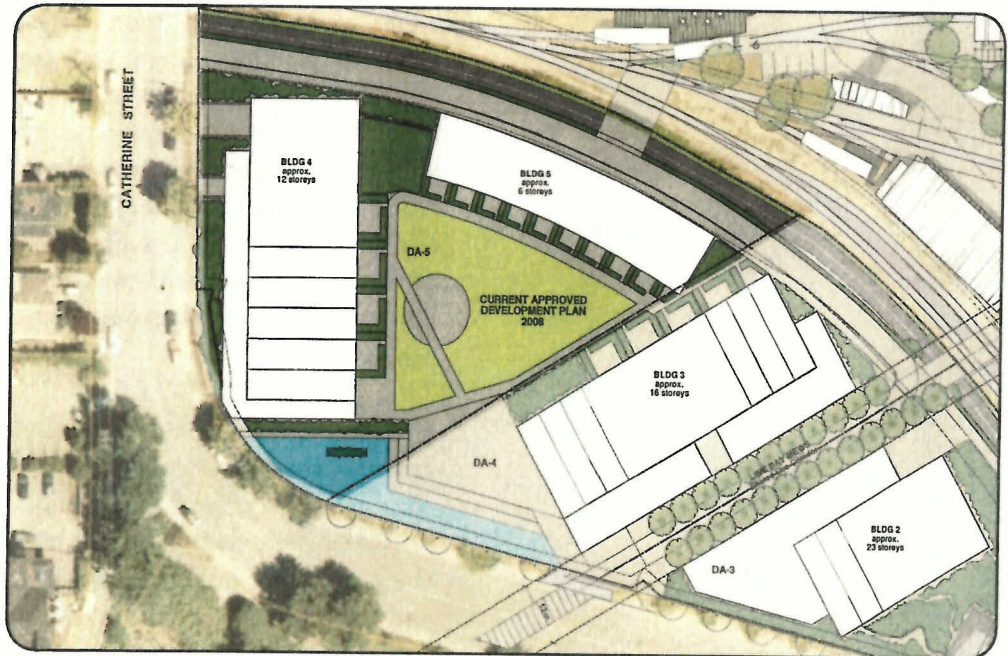
The landscape character along the south edge will be consistent with the streetscape character of Kimta Road.

Lime Bay Mews is located to the east of the site and will be treated in a manner that is in keeping with a pedestrian-oriented mews with features such as street tree planting and street furniture. Vehicular access will be allowed to this space on a limited basis for service vehicles. The design of the mews will be curbsless, with drainage to the centre line of the space, and unit pavers from wall to wall.

Streetscapes along public roads will minimize service/utility functions and parking facilities, blank building walls and solid fencing.

## 4.5 DA-5 Residential and Live/Work

Revised 2015



**Intent:** This sub-area is intended to accommodate residential apartments with the potential for two-storey, city homes on the ground floor of the tower component. A live/work component is intended to be located along the E&N rail line. The ground floor of the live/work building is intended to contain public-oriented studios or retail facing the mews and E&N Trail to the north.

**Building Form:** The live/work component may be either a free-standing building, or potentially attached to the tower component and shall have a curved facade that acknowledges the slight curved alignment of the adjacent railway line.

The podium of the residential tower component will be either single floor garden apartments or two floor city homes, with unit entrances facing Catherine Street. The tower component will be a slim profile. Above the podium, the building will terrace. It is intended that terracing of this mid-section of the building as it transitions from the podium to the tower may occur in increments of approximately three floors. It is intended that the two top floors may terrace from the south side.

The ground floor of the live/work component is intended to be artisan studios or commercial/retail uses that are accessible to the public. At least the lower two floors of the building will consist of two-storey units. The upper four floors can be either two-storey or single level units.

## Architectural

**Character:** The live-work component of this site is intended to be highly public on the ground floor. Therefore, this level of the project will be highly transparent, with large opening doorways and individual unit entrances inviting the public into studio or retail uses. Doorways cannot swing open into the pedestrian area, without consideration for setbacks or alcoves for doorways, to ensure pedestrian circulation is not impacted. Projecting signage and colourful fabric awnings will add to the variety and diversity of this streetscape, and must be designed to avoid potential conflict with adjacent service/emergency vehicle use of the mews.

It is intended that the tower be grounded with a podium constructed of brick walls and columns, aluminum windows, and glass or wood doors. This podium will be similar in scale to the height of the existing Roundhouse building. The upper floors of the tower building must introduce both the project red brick and large areas of glass for transparency. The tower component of the project will have a projecting, podium element that creates the scale of two-storey townhouses, or city homes, along Catherine Street.

Facades at the ground floor will acknowledge the public open space with patios, window overlooks and other urban features designed for the interest and security of members of the public using the adjacent public space. Building facades along public streets, including Kimta Road, shall be designed to be pedestrian-oriented to relate to the public sidewalk.

## Landscape

**Character:** The southern edge of this development will contain the water feature described in DA-4. This water feature will form part of the public realm. The water feature is intended to recall the former extent of Lime Bay in a contemporary interpretation.

A large green space will be formed by the building components of DA-4 and DA-5 to create a courtyard for resident-only use.

The westerly edge of the site will be consistent with the streetscape character of Catherine Street and Kimta Road. Streetscapes along public roads will minimize service/utility functions and parking facilities, blank building walls and solid fencing.

Landscaping should be provided on the large roof decks formed by the terracing of the building on its south façade.

## 5.0 SUSTAINABLE DEVELOPMENT GUIDELINES

Encouraging sustainable development is an integral part of planning for the economic, social, and environmental success of the Roundhouse project. Heritage rehabilitation and the adaptive reuse of historic buildings are key elements of sustainable development and offer significant efficiencies in the reuse of materials and the preservation of cultural capital. The “recycling” of old buildings in established neighbourhoods offers additional development and land use efficiencies associated with the integration of existing urban infrastructure and the introduction of a new mix of uses to contribute to more compact development patterns.

Sustainable criteria which are measurable at the Development Permit application stage have been included within this section. A more extensive document outlining environmental sustainability intentions beyond form, character, exterior design, finishes and landscaping has been provided in Appendix A.2 for information purposes.

The following guidelines are included to emphasize the fundamental importance of pursuing a holistic, sustainable approach to design.

### 5.1 Heritage Conservation

Roundhouse is a National Historic Site and a designated City of Victoria heritage property. The Roundhouse buildings and structures will be conserved in accordance with the Heritage Conservation Plan and will be subject to City of Victoria approval.

#### 5.1.1 Reuse of Heritage Buildings

All of the existing heritage buildings, including the Roundhouse, Backshop, Car Shop and the Stores Building will be conserved and reused. It is anticipated that 100% of the existing floor areas of heritage-designated buildings will be conserved. Conservation and rehabilitation of the Turntable to a functioning state will also be achieved. The applicant shall provide a description and estimate of the percentage of heritage buildings being reused at the Development Permit phase for DA-1.

#### 5.1.2 Reintroduction of Lost Heritage Structures

Roundhouse may consider the reintroduction of railway related structures, such as the water tower and sand tower, that were once part of the railyard setting as icons of the site’s history. These structures may serve as landscape and interpretive features of a rehabilitated site.

## 5.2 Sustainable Site Planning and Design

Site planning for Roundhouse utilizes a building massing strategy that enables the preservation of open spaces at the ground level for the development of pedestrian walkways, public gathering spaces, green spaces and resident amenity areas. The design of these open spaces should take into consideration sustainable development strategies.

### 5.2.1 Stormwater Management

Natural filtration of storm water through permeable paving and on-site bio-swales enhances the natural environment and reduces the impact of new development on existing urban infrastructure and the natural environment. Stormwater management strategies should be included in each phase of development. Stormwater management strategies are encouraged in each phase of development as follows:

- Utilize permeable paving and other permeable surfaces unless site remediation requirements and/or approved risk assessment strategies prevent such surfacing. Permeable paving absorbs water and allows it to penetrate to the sub-surface in order to replenish soil moisture and aquifers rather than letting it flow into storm drains. It reduces flooding and volume of polluted storm water that reaches local bodies of water.
- Reduce the heat island effect on site by utilizing the following measures:
  - Provide shade by the use of street trees, overhangs, and building elements.
  - Utilize light-colored paving materials with an albedo of 0.30 or greater.
  - Minimize building and hard surface paving footprints.

### 5.2.2 Sustainable Landscape Design

Landscape techniques that minimize maintenance and water requirements and reduce harmful fertilizer, herbicide, and pesticide use should be used.

- Complete environmental site remediation of contaminated site areas. (The Roundhouse site has both groundwater and soil contaminants.)
- Minimize disruption of the site by:
  - Protecting existing landscape features to help prevent soil erosion, maintain sources of natural cooling, divert waste from landfills, preserve nature and add value to the community.
  - Completing a landscape survey to determine the feasibility of preserving or relocating mature trees, shrubs and native vegetation.
  - Minimizing the development footprint and providing permanent open spaces to help protect the local ecosystem, conserve natural resources, and enhance the community.



### *5.2.3 Sustainable Plantings*

Planting of drought-tolerant species and native/indigenous plantings in both the public and private realm to minimize water usage should be pursued.

- Utilize plants and vegetation that fit within the climate and the site and which are native to the area to help lower maintenance needs and the amount of lawn or turf areas.

## **5.3 Exterior Building Materials and Finishes**

Detailed architectural design of new buildings at Roundhouse should reference sustainable design strategies in the selection and use of exterior materials. Wherever possible, materials, methods and technologies that reduce energy and resource use should be considered.

### *5.3.1 Landscaped Buildings Terraces*

Building design strategies that incorporate usable outdoor space and exterior landscaping features such as green roofs on terraces should be pursued as a means of creating additional urban green space, reducing runoff and mitigating urban heat island effects.

### *5.3.2 Roof Materials*

Light coloured roofing materials that reflect heat away from the building should be used. This will increase occupant comfort and decrease cooling loads or air conditioning. Lighter coloured roofs generally last longer because they do not thermally expand and contract as much as darker coloured roofs.





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### EXECUTIVE SUMMARY

This report describes a pedestrian level wind (PLW) study undertaken to assess the wind conditions around the proposed Roundhouse site in Victoria, British Columbia. The study merges simulation results based on computer modelling of the wind field for the full range of wind directions, with a statistical model of the Victoria wind climate to predict pedestrian wind conditions at grade. When compared to industry standard comfort criteria, the results provide an assessment of wind comfort and acceptable activity levels over the entire site detailed in the subsequent report.

Results of the present study indicate that pedestrian wind conditions at grade are generally calm and suited to the intended use of most public areas and pedestrian pathways linking various destinations. However, depending on the specific intended uses, mitigation may be appropriate for one or more areas.

The windiest locations on the current site occur: (i) along the Lime Bay Mews corridor between Buildings 2 and 3; (ii) along the south corner and southeast elevation of the Building 2, and (iii) along the west side of Building 4 and over part of the residential courtyard. Of these areas, and based on our understanding of site usage, the only area that should be considered for mitigation would be the pedestrian corridor between Buildings 2 and 3. All other areas provide acceptable conditions or nearby refuge in the event of adverse wind conditions. No dangerous conditions are expected to occur anywhere on site under typical weather conditions. This statement does not apply to infrequent weather events that recur on a cycle of several years or more.

Without specific knowledge of building access points at this time, the general wind character over the site suggests that wind conditions around building entrances would not generally create problems for pedestrians, except potentially near the windiest areas noted. The details of these conditions should be reviewed once building details are known.



Sustainable development requires the balancing of environmental, social and economic considerations. In addition to the sustainable features of Roundhouse inherent in its program of mixed-use development, heritage rehabilitation, historic building reuse, environmental remediation and brownfield redevelopment, Roundhouse intends to follow best practices with respect to sustainable development and green building strategies.

Accordingly, it is intended that all new buildings at Roundhouse be designed to meet green building design standards as set by LEED or similar standards. Building and landscape design should be consistent with Smart Growth principles and demonstrate a commitment towards environmental performance and stewardship. Specific design elements that make a positive contribution to the overall sustainability of the neighbourhood are required.

The following topics are presented for information and reference purposes only and are not subject to review at the Development Permit stage.

### **1.1 Environmental Sustainability**

Current best practices in the proposed building's environmental and energy performance may included, but are not limited to the following:

#### *1.1.1 Sustainable Building Techniques*

Sustainable building techniques, including higher levels of building insulation, water use efficiency, locally manufactured products and materials, recycled and "healthy" materials and finishes.

- a) Foundation, Structural Frame, and Building Envelope:
  - Build rain and groundwater dispersion elements into the foundation to prevent unwanted moisture.
  - Use concrete with a fly ash content of approximately 25%. Concrete with fly ash content is stronger, more durable, easier to work with, requires less water, and is a more cost-effective option.
  - Use high recycled-content steel framing, where applicable.
  - Specify recycled aggregate for fill, back fill, and other uses.
  - Increase thermal mass to reduce heating and cooling energy use and moderate indoor temperature.
  
- b) Insulation:
  - Install Recycled-Content Insulation: most building insulation contains some recycled content. Using products with high post-consumer recycled content reduces reliance on raw materials and reduces landfill deposits.

Choose products with the highest recycled content possible and give preference to materials with a high level of post-consumer recycled materials.

c) Heating Ventilating and Air Conditioning (HVAC):

- Encourage a high standard of indoor air quality by encouraging energy efficiency, controlling duct leakage, tightening the thermal envelope, balancing air pressures, introducing fresh air, installing pest control measures, reducing indoor contaminants, and managing moisture issues.
- Design and install mechanical ventilation systems to meet established ventilation standards.
- Install high efficiency furnaces with 90% AFUE (annual fuel utilization efficiency) or greater. A properly sized, high efficiency furnace costs less to operate and reduces air emissions.

d) Plumbing:

- Distribute domestic hot water efficiently throughout the building. The majority of energy used to heat water for domestic purposes is lost in long piping runs to remote fixtures. Efficient design and distribution of domestic hot water saves energy, conserves water, uses less piping, and speeds hot water delivery.
- Install high efficiency toilets, which will result in residents using less water and a reduction in water and sewer costs. These toilets should meet rigorous performance requirements.
- Install all faucets with flow reducers or low-flow faucets to save water and money by slowing or limiting the flow of water.

e) Flooring:

- Use environmentally preferable flooring that is low-emitting.
- Use rapidly renewable flooring materials that are attractive, durable, low-toxic, perform well and reduce the pressure to harvest old-growth forests. Bamboo, cork and natural linoleum flooring are alternatives to hardwood flooring. Sustainably-harvested woods also offer environmental benefits.
- Use linoleum where applicable as it is durable, stain resistant, produced from natural materials, and has a life span of 20-30 years.
- Use recycled-content ceramic tiles, which can contain up to 70% recycled glass or other materials and can be used wherever conventional tiles are specified.
- Install recycled-content carpet where conventional carpet is generally used.
- Provide thermally massive floors that will reduce heating and cooling energy use and will moderate indoor temperature.

f) Windows:

- Install energy-efficient windows to help to keep the building warm during the winter and cool during the summer, as well as to save energy and cost.
- Provide daylighting into the buildings through windows, skylights and glazed

doors to all regularly occupied spaces.

g) Finishes:

- Use environmentally-preferable materials for interior finishes such as:
  - Low-VOC or zero-VOC paint that reduces emissions of volatile organic compounds (VOCs), improving indoor air quality and reducing the formation of smog.
  - Recycled-Content Paint
  - Low-VOC, Water-Based Wood Finishes
  - Low-VOC Adhesives and Caulks

*1.1.2 Sustainable Energy Use*

Alternative sustainable energy features such as low energy appliances, as are available at the time of construction, will be used.

- Install High Efficiency ENERGY STAR® Appliances because they use less energy, water, and space than conventional appliances.
- Install a built-in recycling center, usually built into the kitchen cupboards, which provides convenience by locating a recycling bin right next to a trash bin, keeping materials separated and free from contamination.
- Alternative infrastructure systems and green solutions to water, waste, and energy are strongly encouraged. Examples could include: rain water harvesting, grey water recycling systems, wind power, solar power, and geothermal energy.
- In particular, use of ground source energy (geothermal energy) is strongly encouraged and should be considered for commercial, retail and the hotel hot water servicing, heating, and cooling the structures.

*1.1.3 Energy Efficient Lighting*

The design and installation of outdoor lighting will consider the energy-efficiencies and will reduce the impact of light pollution.

- Reduce light pollution from exterior finishes by selecting exterior light fixtures that have the minimum light output necessary for safety and visual acuity, and shield fixtures to keep excess light from leaving the site. Downcast lighting preserves the dark sky at night and reduces light pollution within the community setting.
- Use compact fluorescent bulbs as they consume one-third the amount of electricity used by traditional incandescent bulbs to produce equivalent light and last up to 10 years.

#### *1.1.4 Sustainable Transportation and Transportation Demand Management*

Alternative transportation choices and implementation of a Transportation Demand Management (TDM) program are to be pursued. Complete details of the TDM program are to be contained in the Master Development Agreement. The following summarizes some of the key elements of sustainable transportation strategies included in Roundhouse:

- The TDM program for the Roundhouse includes pedestrians, cycling, car-sharing and electric vehicles, the harbour ferry, commuter rail, and sustainable parking strategies.
- Retain the E&N Corridor for rail use.
- Subject to future commuter rail/train planning, build a new Russell's station, conveniently connected to local buses.
- Continue the train servicing operation at the Roundhouse.
- Design for walking, bicycling, and other modes of transportation that are healthy forms of physical activity, transportation and neighborhood interaction.
- Design traffic-calming elements such through materials and landscaping to reduce speeding and increase public safety.
- Promote car-free transit by focusing on circulation patterns, connecting walkways and paths to places of interest, creating bike lanes, and encouraging public transit.

#### *1.1.5 Green Building Opportunities*

Buildings are where most resources, including water, energy, materials, and land, are consumed within a community. People spend virtually all of their time in these buildings therefore, they are incredibly important determinants of resource use, production of waste materials and pollutants, personal health, and employee productivity. All buildings shall be designed to meet green building design standards as set by LEED or similar standards.

- Design buildings to reduce consumption levels of water, materials and energy use during their life cycle, operation and disposal.
- Design for technology upgrades with convenient cable pulls and electrical capacity. As new technology becomes available, retrofitting should occur.
- Identify building and site synergies and complementary land uses for maximizing opportunities for energy performance.
- Integrate building features to educate occupants and visitors about the sustainable building components.
- Provide improved comfort and health through premium indoor environmental quality.
- Utilize the LEED Standard or similar standards as guidelines to measure green buildings.
- Consider utilizing holistic energy efficiency strategies to achieve and exceed standards.