

brownfield redevelopment - return to nature  
**cheryl bouwmeester**

crossgrain masterplan : hastings corridor individual design

# brownfield redevelopment

## brownfield redevelopment - return to nature

Many cities around the world have suffered from suburban flight and rapid decline. The push to stop suburban sprawl and re-densify the central city has led to the re-development of brownfield and contaminated sites. Brownfield sites have been defined as “abandoned, vacant, derelict or underutilized commercial and industrial properties where past actions have resulted in actual or perceived contamination and there is an active potential for re-development” (BC - Ministry of Environment).

Brownfields are often located in or near established communities, are on large parcels of land and tend to be on or within a short distance of a river, lake or inlet. If left as they are, they pose an even higher risk to human health and environmental quality than if re-developed (BC - Ministry of Environment) and have the opportunity to generate economic, social and environmental benefits. Because of the size of the land parcels there are many opportunities for re-development. Residential and mixed-use commercial developments are the most typical for brownfield sites (National Roundtable on the Environment and the Economy. 2003). Yet, the opportunity of creating public space and returning the site to a natural state also benefits the environment and the surrounding community (BC - Ministry of Environment).

In most cases, site remediation is a must, as many of these sites are heavily contaminated with organic and inorganic materials (National Roundtable on the Environment and the Economy. 2003) that will continue to pollute the soil, groundwater and the systems that they flow into, and not to mention the risk that it poses to humans.

The Provincial Governments within Canada have taken action against urban sprawl through the creation of greenfield legislation emphasizing the importance of looking at our underutilized old industrial lands and the protection of primary agriculture and natural features (CMHC. 2008). The Acts that have been put in place only strengthen the importance of re-development and utilization of land (BC - Ministry of Agriculture and Lands. 2008). As one of the most progressive organizations regarding contaminated site regulations, British Columbia, and the Ministry of Agriculture and Lands have implemented the Brownfield Renewal Strategy that emphasizes the importance of awareness and encourages redevelopment of brownfield sites (BC - Ministry of Agriculture and Lands. 2008).

Brownfield development is essential in developing a sustainable community (CMHC. 2008).



**CMHC, 2008**

[http://www.cmhc.ca/en/inpr/su/sucopl/sucopl\\_004.cfm](http://www.cmhc.ca/en/inpr/su/sucopl/sucopl_004.cfm)

**BC - Ministry of Agriculture and Lands. 2008**

[http://www.agf.gov.bc.ca/clad/ccs/brownfields/renewal\\_strategy.html](http://www.agf.gov.bc.ca/clad/ccs/brownfields/renewal_strategy.html)

**NRTEE. 2003**

<http://www.nrtee-trnee.com/eng/news-media/media-releases/20030210-Brownfields.php>

# goal + objectives + principles

## brownfield redevelopment - return to nature

### goal

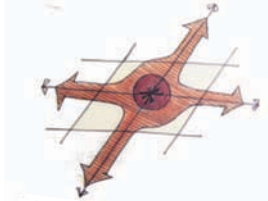
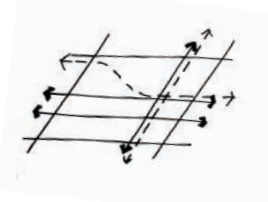

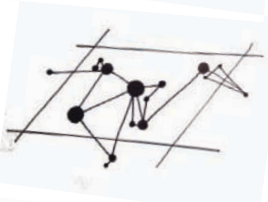

to transform the contaminated industrial lands into usable greenspace + urban park to link the surrounding community



### objectives

- 1 to remediate site contamination
- 2 to create an interaction with nature
- 3 to develop a pedestrian + bicycle network that connects to the existing system
- 4 to manage on-site + off-site stormwater management
- 5 to create a link between green spaces
- 6 to create a cohesive green network with streetscaping + green infrastructure
- 7 to develop areas of land surrounding the site as funding for the project
- 8 to provide a mix of land uses
- 9 to utilize the views of the site and naturally sloping topography
- 10 minimize disturbance to established existing forested area

### principles

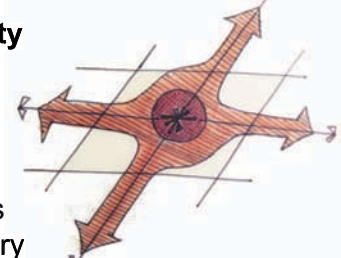
- 1 dwelling density 
- 2 mobility 
- 3 green connectivity 
- 4 place 
- 5 business dynamics 

# principles

## brownfield redevelopment - return to nature

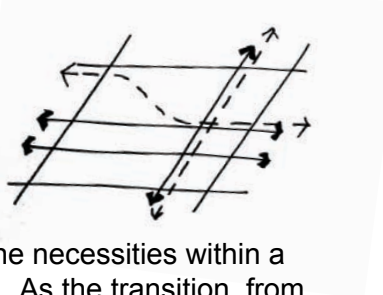
### 1 dwelling density

A variety of residential densities will be accommodated along the Hastings corridor and primary insections within Burnaby. Focusing development here will supplement the commercial hubs and take advantage of the movement corridor. In addition, development within the site will be mindful of the location, its views and the existing infrastructure and character of the surrounding neighbourhoods.



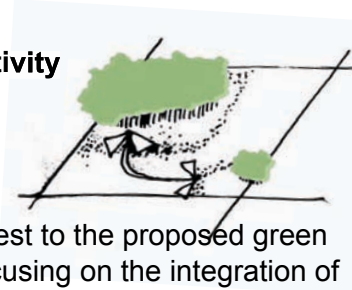
### 2 mobility

Mobility not only focuses on the ease of movement but the accessibility and having the the necessities within a 5-10minute walk. As the transition, from an auto-oriented society towards a transit-oriented design, we can make adjustments to create a more pedestrian, transit and bicycle friendly neighbourhood that does not take away from the regional connections.



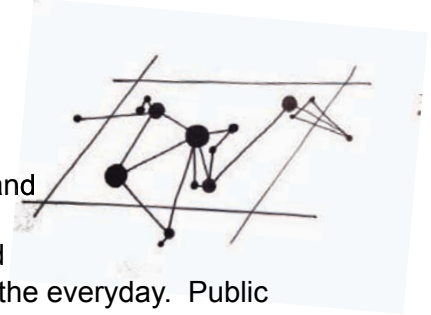
### 3 green connectivity

To promote a healthy environment that connects the existing urban forest to the proposed green network, while focusing on the integration of urban and natural systems. Designs should include, green infrastructure, permeable materials, streetscaping and a transition to a variety of different green spaces.



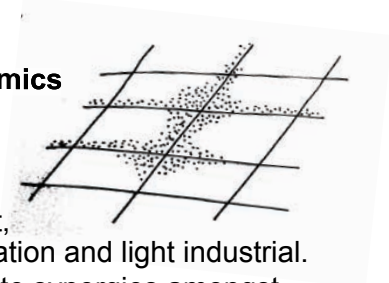
### 4 place

Creating place is in the design public spaces and parks that are memorable and transition from the everyday. Public spaces need to be inspirational, flexible and celebrate the social and cultural surroundings. It is essential for public space to be designed at a variety of scales, with texture and appeal to the immediate population.



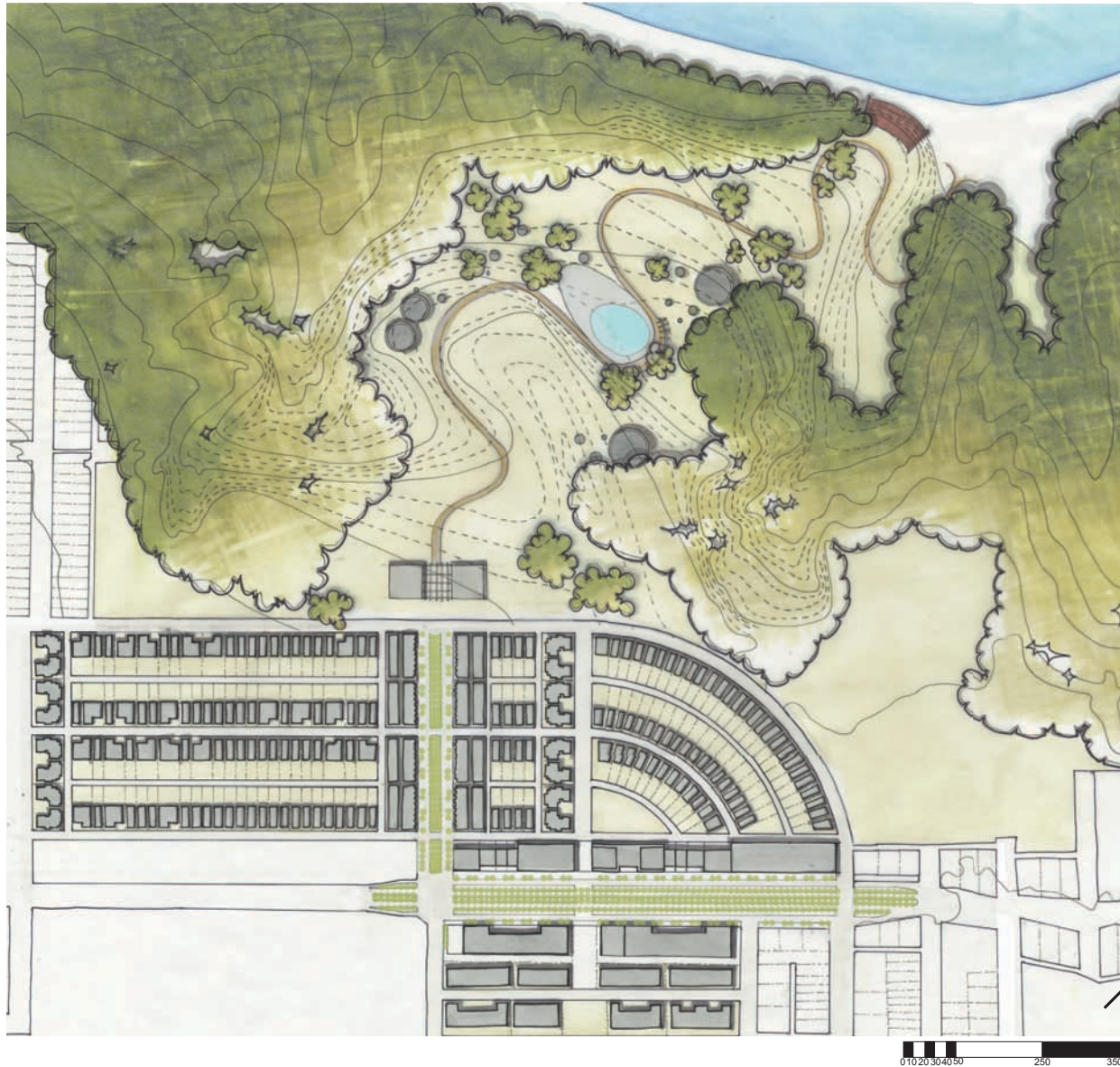
### 5 business dynamics

Creating flexible development that supports mixed-use, entertainment, office, retail, recreation and light industrial. The goal is to create synergies amongst the shop and business owners to create an atmosphere for the shoppers and the community, while emphasizing the benefits of localized living and experiencing local cultures.



# masterplan

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**Photo:** Masterplan for the Shell Oil Refinery.

The masterplan design focuses around a series of interactions that are framed through the implementation of the principles. The design is sensitive to the existing topography and urban fabric.

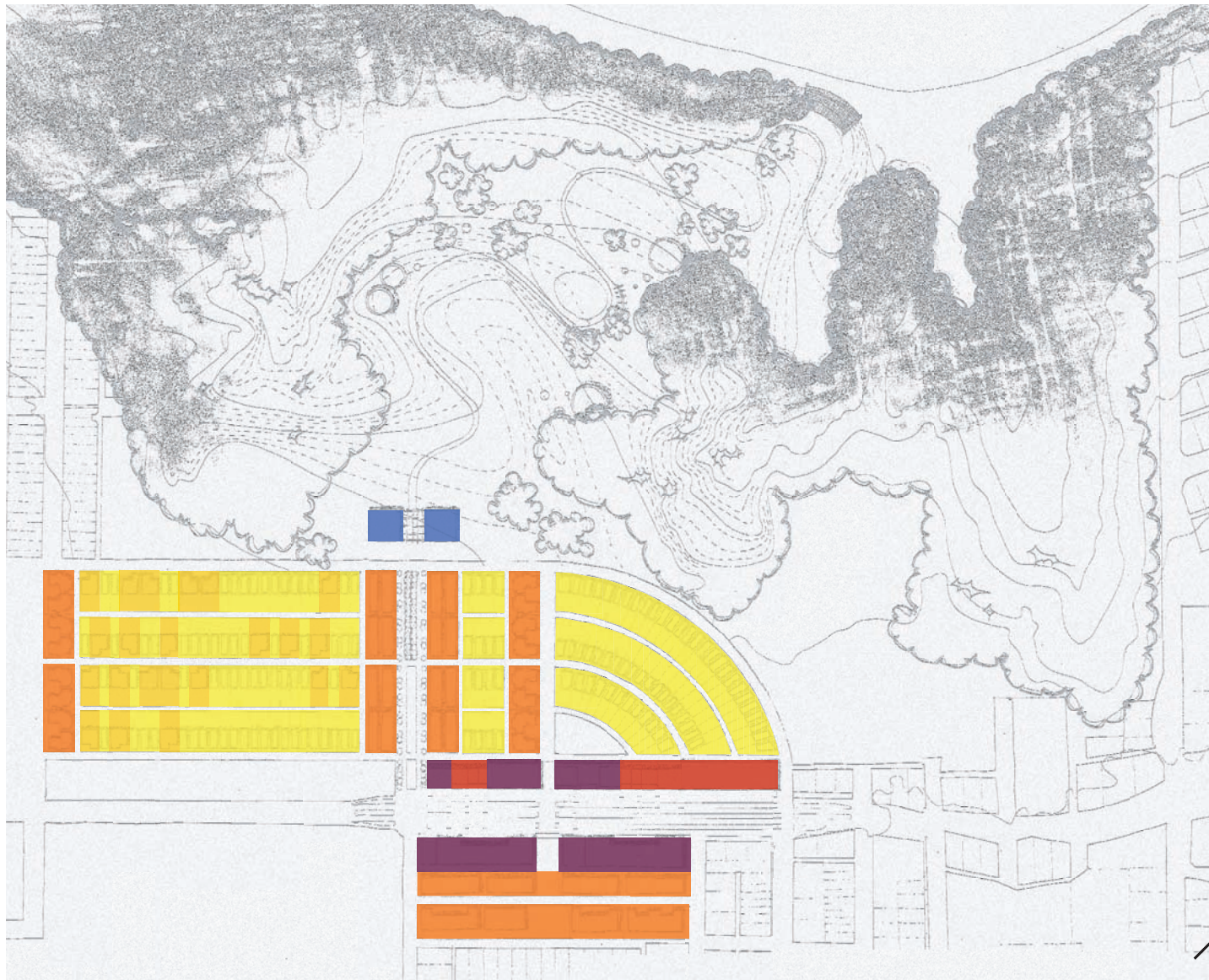
There are two primary design interventions for the brownfield site. The first is the transition of the industrial site for an open space network that connects the neighbourhoods to the waterfront. Through the manipulation of the contours, a series of spaces have been created through an interactive pathway network. Beginning at the top of the slope, users are invited into the landscape through a community centre and the framing of the urban forest. Once past the earth mounds, the juxtaposition of a concrete wading pool is reached. Finally, continuing down the path you reach an outlook deck, overlooking the Burrard Inlet and into the Indian Arm.

The second is the design of a new subdivision along Hastings Street. The subdivision is used in part to fund the remediation and development of the site, while also used to support the new employment opportunities that the Hastings Street mixed-use developments require.

Finally, Hastings Street has been redesigned to accommodate the separation of commuting and local traffic while celebrating pedestrian movement and cyclist.

# land use







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**Photo:** Land Use for the Shell Oil Refinery.

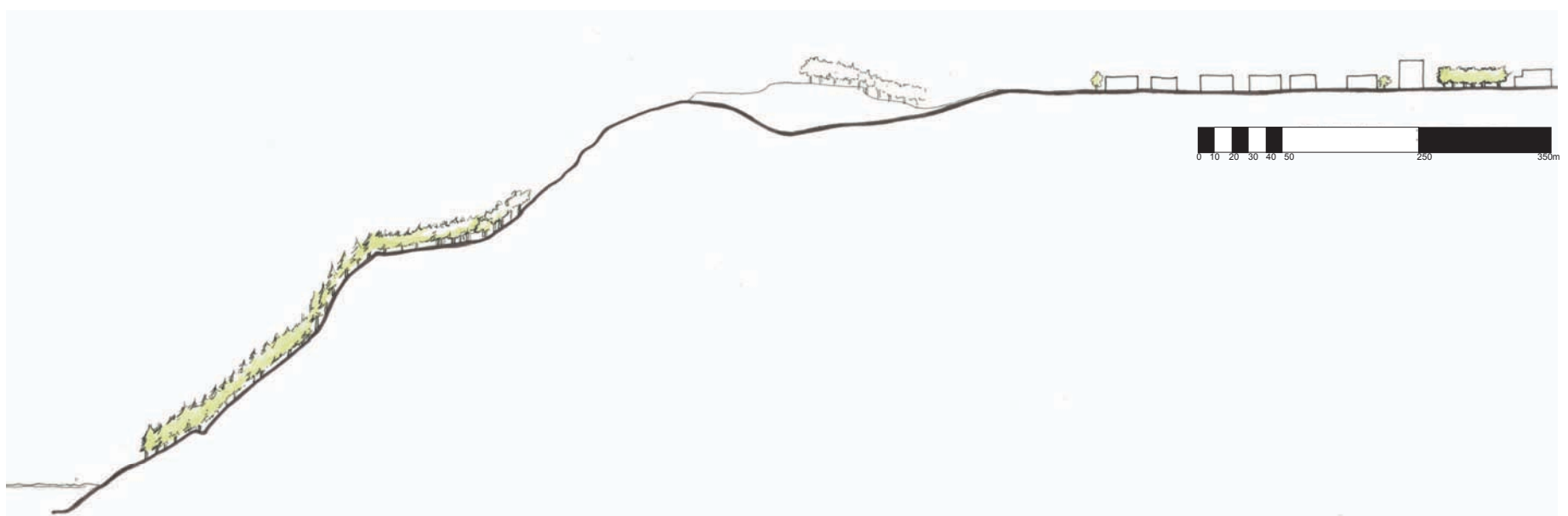
The land use designation of the residential subdivision ranges from single family housing to multi-storey residential. The variety of housing types allows for diversity in the building typologies and appeals to a greater audience. This density is also responsive to the surrounding neighbourhoods.

The commercial node around Hastings Street is primary mixed-use, ranging from 4-6 stories. The primary function surrounding this strip of Hastings is to incorporate retail and commercial at street level with office, clean industrial and residential above.

-  dual occupancy single family
-  semi-detached
-  4-storey townhouse + apartments
-  4-storey mixed use
-  6-storey mixed use
-  civic

# site section

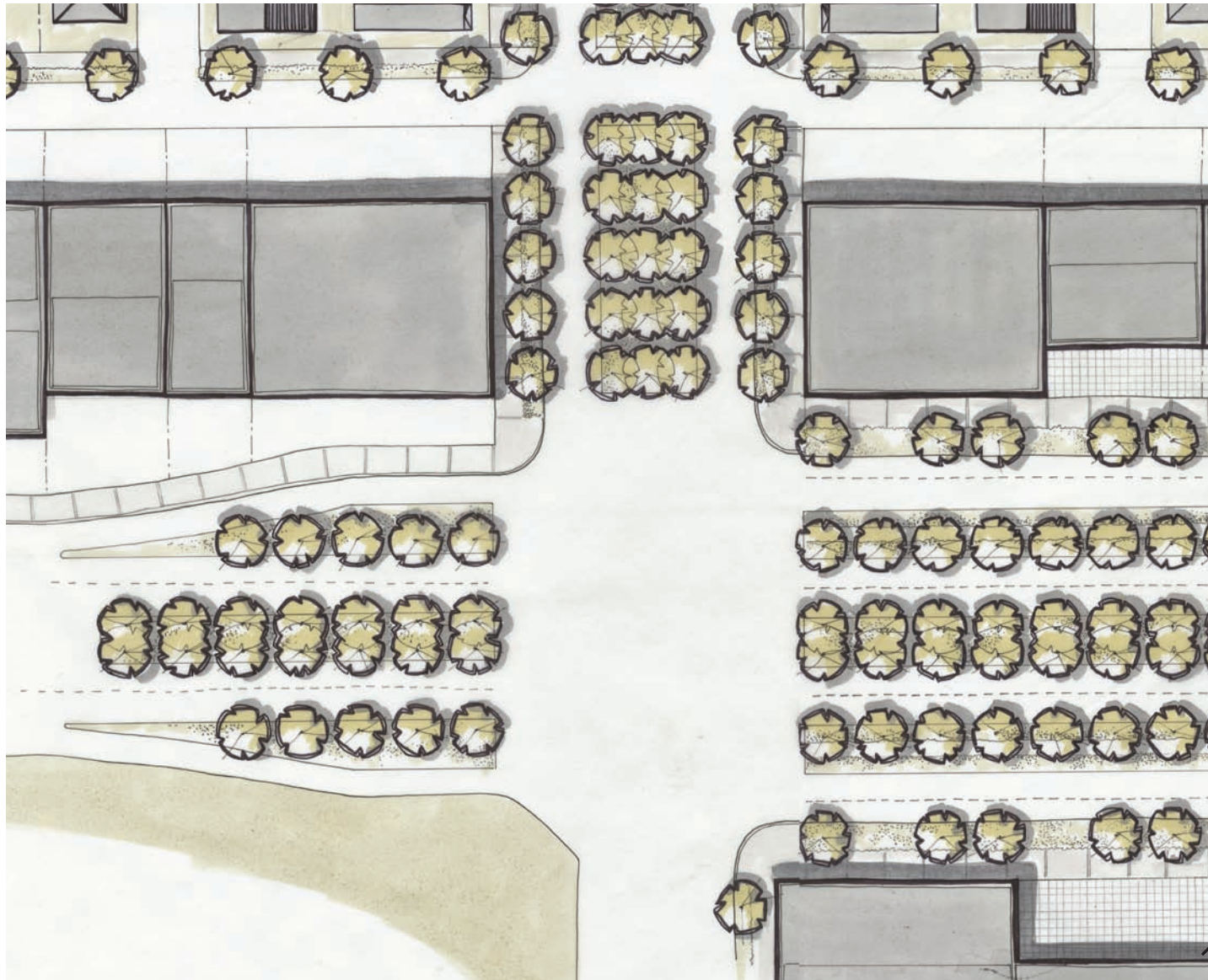
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**Photo:** Above: site section. This section represents the 100m elevation change, creating many views and interesting areas for terracing and pathways. The existing urban forest creates a strong focus of movement towards the water and frames the experience. Below: two images of the proposed site conditions. Right: The sloping conditions of the site with a strong forested edge. Left: The upper condition around the community centres.

# hastings street re-design

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**Photo:** intersection of hastings street and kensington avenue.

This plan diagrams the transition to and from the parkway experience to the east of kensington avenue.

This design has expanded the existing right of way of hastings street to allow for the desired separation of local and commuter traffic.

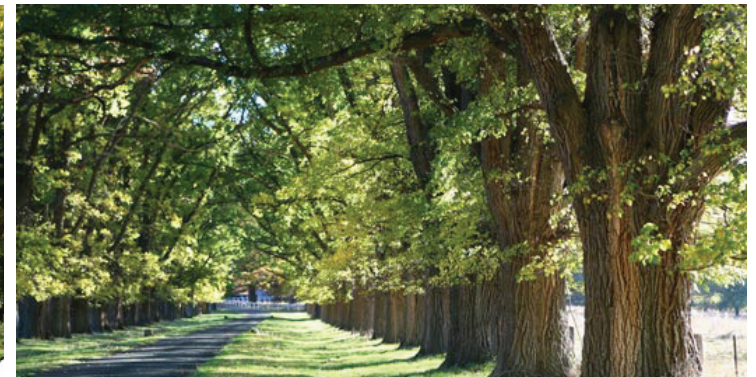
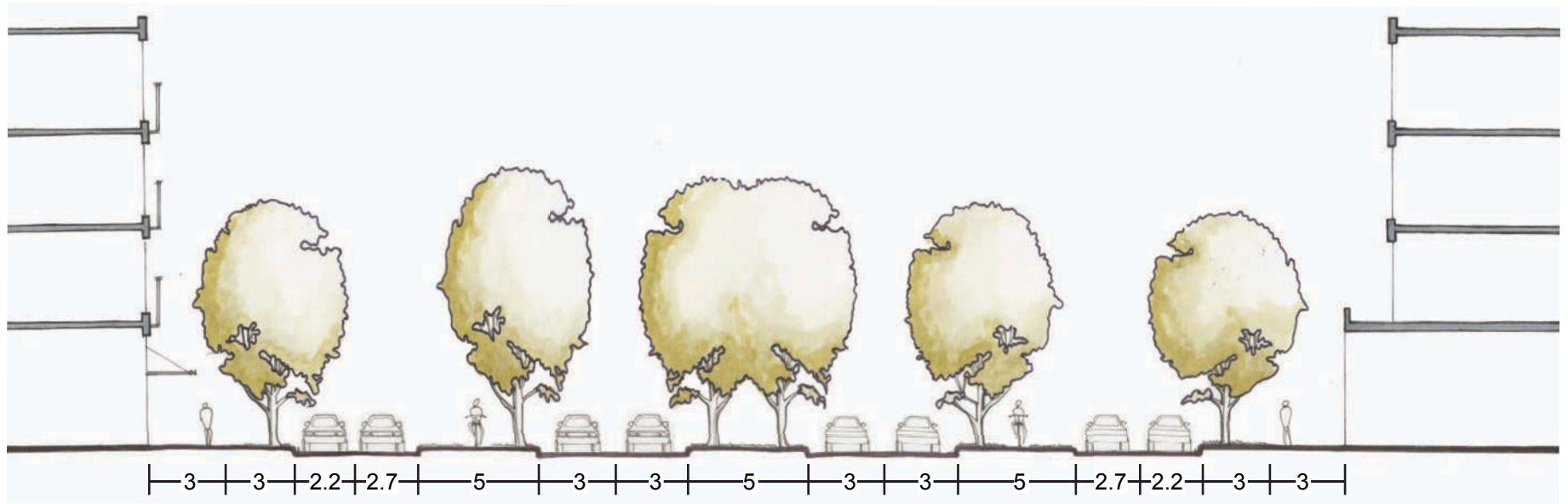
Hastings Street is to be structured with 2 lanes of travel to the east and the west for commuting traffic, 1 lane and on-street parking in both directions for local traffic to accommodate the commercial and office buildings.

In addition to the transformation of hastings street, kensington avenue has been expanded to accommodate a large tree-lined boulevard to direct people towards the community buildings located at the terminus of the road.



# hastings street section

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**Photo:** hastings street section. This parkway design focuses on the separation of commuter traffic, local traffic, cyclists and pedestrians allowing for a calmer environment. With the integration of 5m tree-lined boulevards the expansion of hastings street between kensington and sperling allows for a more luxurious experience.

# impressions of place

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left: urban courtyard, connecting the community North of hastings to the commerical corridor. providing access to the edging buildings, creating space for social gathering and interaction.



right: pedestrian crossing through hastings street, emphasized with the continuation of the trees from the boulevards and transition of paving materials

bottom: intersection of hastings street and kensington avenue. transition of hastings street to urban parkway with an increased density and commercial activity situated along the corridor.



## conclusion

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**Photo:** Masterplan for the Shell Oil Refinery.

The redevelopment of brownfield sites is necessary in developing a sustainable community. Even with heavy contamination, the redevelopment of a brownfield site should be a priority of all cities as it creates opportunities for infill development instead of sprawling suburbs.

This design has recognized the potential for redevelopment and incorporation into the existing fabric of the City of Burnaby. It focuses on the creation of space and how one moves through and interacts with each space or place that has been created for them. It shows appreciation towards the importance of movement to, from and within a site, while satisfying the need to appeal to a variety of modal uses. The design has a reflection of its past, keeping memory of its industrial history, to ensure its memory is never lost.