

## Proposed Urban Design Framework

This chapter provides an urban design framework. While acknowledging the importance of a built environment's social elements, it focuses on physical design issues due to the project's constraints of length, time and scope.

Structure wise, the chapter is organised in 5 sections:

- First, a section on **overarching design principles and related strategies**. Here, the design strategies are also tied to the opportunities addressed in the previous chapter. This explains which opportunity, alone or with other opportunities, informed which design strategy.
- Second, a section that proposes sixteen **typologies and patterns**; each derived from a design strategy discussed in the first section. The types and patterns essentially visualises how each strategy can manifest in terms of a building, a block/site design, and physical and programmatic systems across multiple blocks.
- Third, a section that looks at **larger system daigrams** that the principles and strategies play out across the entire study area.
- The fourth section is the **masterplan**.
- The fifth section concludes with 2 **focused study of various areas** in The Flats through street-level vignettes, street sections, and provides basic information on development data in terms of average FSRs, square-footages, different land uses, and green spaces.



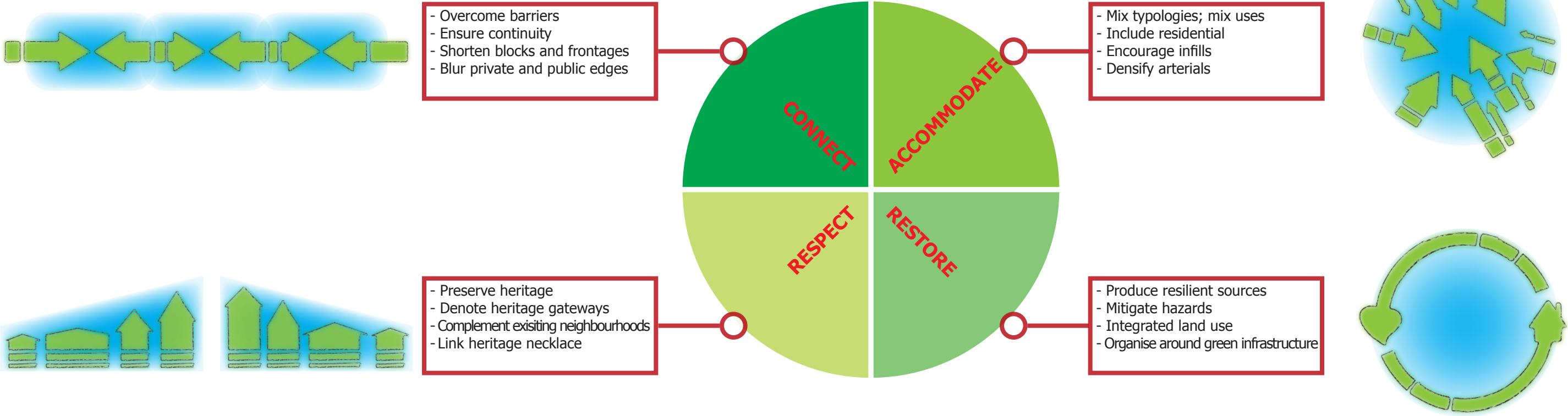


Principles and Strategies

The aims to enliven The Flats with greater commercial retail activities, to provide affordable workspace for new green industries and offices, and to have more residents to support these activities will require a set of organising design principles to help plan and design a conducive physical environment.

This section outlines four overarching principles that are developed from summarising the opportunities outlined in chapter 3. Each principle is accompanied by four design strategies that inform the types and patterns explore later in this chapter.

The diagram on the right illustrates the four principles and associated strategies:



4.1.1. Connect

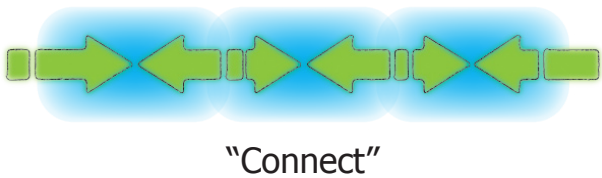
As the previous chapters suggest, a lack of connections within and around The Flats is prohibitive to walking and more intense commercial, institutional, office and residential developments. Better connections – physical and psychological – will attract more people and activities there. Urban design strategies deriving from this principle can explore ways to:

- **Overcome barriers:** Pedestrian and bicycle bridges spanning across the rail yards can help create more north-south access routes to overcome the physical barriers caused by the east-west rail yards that span The Flats’ entire length. These bridges can help people on either side of the rail yards move to each other’s area to access amenities and services with greater ease.<sup>1</sup> These can be landscaped bridges that extend from public parks located at its ramps.
- **Ensure continuity:** Paths from one area to another should ensure visual and programmatic diversity to make the journey pleasant. This can mean buildings that hug the street while maintaining human-scale and a 1:1 building height-street width ratio. It also means avoiding blank walls when possible; instead curtail-walls, shop-windows amongst other façade articulations can provide visual dynamism and permeability between the streetscape and parts of a building’s interiors.<sup>2</sup>
- **Shorten blocks & frontages:** Many of The Flats exceedingly long blocks (often over 500’) disrupts connectivity. Shorter blocks and building frontages can create a finer more flexible street pattern where pedestrians can choose varied and interesting routes from one area to another.<sup>3</sup> Landscaped right-of-ways and mews in-between the shortened blocks allow the public to access a street, lane or even park on the other side.<sup>4</sup>
- **Blur Private-Public Edges:** Treat building and lot edges and the adjacent streets and lanes as one harmonious entity rather than divisive lines.<sup>5</sup> This can mean having front- or backyards as well as green walls contribute to the streetscape.

Linking ‘Connect’ Strategies with Opportunities

Each design strategy discussed here are informed by two or more opportunities. Each strategy can be expressed as an urban form – a particular design feature, a building typology, a single-block pattern, or a multiple-blocks morphology. The table below illustrates how the design strategies under the principle of ‘connect’ is informed by the opportunities outlined in the previous chapter.

Design Strategy	Informative Opportunities
Overcome barriers	<ul style="list-style-type: none"><li>• <b>Build pedestrian-bicycle bridges</b> to improve connections, especially across rail yards</li><li>• <b>Reconfigure rail footprint</b> of underutilised rail yards to increase north-south connectivity</li><li>• <b>Create a series of centres</b> with the pedestrian-bike bridges as a possible key design feature</li><li>• <b>Increase bike lanes</b> on current and future streets and greenways and connect them to bike-oriented bridges</li></ul>
Ensure continuity	<ul style="list-style-type: none"><li>• <b>Intensify arterials</b> with more commercial, retail, office and housing uses</li><li>• <b>Adopt gradated zoning</b> along arterials to maintain some amount of city-serving industrial lands but also create more robust uses elsewhere</li><li>• <b>Redefine mixed use</b> to explore how current industrial lands can incorporate activities that enliven streetscape</li><li>• <b>Stitch neighbourhood boundaries</b> by responding to the character and form of nearby neighbourhood edges to produce visual-architectural continuity</li><li>• <b>Maximise existing residential allowances</b> on some I-3 lots to create artists live-work spaces that contribute to street liveliness</li></ul>
Shorten blocks and frontages	<ul style="list-style-type: none"><li>• <b>Diversify building types</b> by having finer grain buildings to create informal landscaped pedestrian thoroughfares between the buildings</li><li>• <b>Extend existing green networks</b> such as bicycle paths and traffic-calmed streets through large lots at The Flats to help parcelise the large lots</li></ul>
Blur private-public edges	<ul style="list-style-type: none"><li>• <b>Blend private-public spaces</b> by designing private patios, green-walls, public plazas and right-of-ways as one physical and visual entity</li><li>• <b>Innovate environment-responsive architecture</b> by designing publicly accessible spaces such as eco-decks and green-roofs over above-grade carparks</li><li>• <b>Cultivate off-ground agriculture</b> such as hydroponics garden that are publicly accessible during daytime, or at least visible from street-level</li><li>• <b>Encourage restorative greenways</b> using disused rail yards together with adjacent lots to create publicly accessible restorative green spaces</li></ul>



(1) <http://www.useful-community-development.org/walkable-community.html> (Accessed: June 29th 2011)  
(2) Bosselmann, Peter, “Images in Motion” in *Urban Design Reader* (Eds. M. Carmona & S. Tiesdell), Oxford, UK: Elsevier Architectural Press, 2007, p.285.  
(3) Lewis, Sally, *Front to Back: A Design Agenda for Urban Housing*, Oxford, UK: Elsevier Architectural Press, 2005, p.6.  
(4) Lewis, 57.  
(5) Moughtin, Cliff, *Urban Design: Street and Square*, Oxford, UK: Elsevier Architectural Press, 2003, 222.

4.1.2. Accommodate

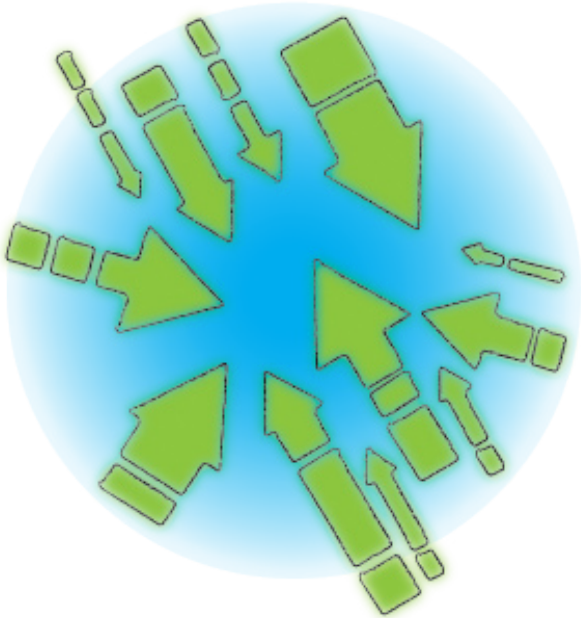
As a complete community The Flats must accommodate the city’s wider needs to provide lands for diverse uses including traditional light industrial operations, new green city-serving services, high-tech creative businesses, education institutions, commercial retail opportunities and even housing. Urban design strategies deriving from this principle can explore ways to:

- **Mix typologies; mix uses:** Lots with sufficient depth (> 250') and frontage (> 500') can be subdivided to produce a 'double front configuration' where finer grain commercial retail-oriented buildings sit on the street-side, and industrial-oriented buildings with larger floorplates sit on the lane-side. A courtyard can be used to screen noise and provide privacy. This mix of building types on one lot creates visual and programmatic diversity.<sup>6</sup> The front and back halves can either be legally subdivided with the front rezoned as commercial or CD-1, and the back being kept I-2 and I-3. Alternatively, a clause in the development permit and/or tax-break incentive may be pursued to develop both commercial-retail and industrial buildings.
- **Include residential:** Lots along major arterials and future greenways that are not deep (< 200') or wide (< 300') enough to support the 'front-back configuration' to include industrial and office uses can explore developments with residential above commercial retail units, community services and amenities, and offices.<sup>7</sup> The overall idea is to have some lots take on more residences (especially on the Main Street side), while other lots (especially on the Clark Street side) will cater more to light industries like storage and wholesalers. Hence, a more context-specific approach to mixed use.
- **Encourage infill:** Underutilised lots can be infilled to provide offices, residential and new industrial uses such as artist studios provided no prior ecological programs are already planned for the underutilised sections for the purpose of environmental remediation.<sup>8</sup> Underutilised areas can either be subdivided, or the whole lot can be rezoned to CD-1 or a future iteration of the I-3 zone that makes provisions for infills to include infill structures.
- **Densify arterials:** Densities along major arterials can be increased moderately to allow more office and residential floorspace (where appropriate) to economically buttress future commercial retail developments. A finer grain approach to shop and office sizes also allow for a greater diversity of businesses that can range from cafes, boutiques, design firms, print shops to art galleries. The social benefit of a more intense street is a greater opportunity for interaction and cross socio-economic understanding.<sup>9</sup>

Linking Accommodate' Strategies with Opportunities

Each design strategy discussed here are informed by two or more opportunities. Each strategy can be expressed as an urban form – a particular design feature, a building typology, a single-block pattern, or a multiple-blocks morphology. The table below illustrates how the design strategies under the principle of 'accommodate' is informed by the opportunities outlined in the previous chapter.

Design Strategy	Informative Opportunities
Mix types; mix uses	<ul style="list-style-type: none"><li>• <b>Diversify building types</b> to cater to different, but preferably integrated uses within a block or across adjacent blocks</li><li>• <b>Adopt gradated zoning</b> to maintain some adequate city-serving industrial lands but also create more robust developments elsewhere</li><li>• <b>Redefine mixed use</b> to explore how current industrial lands can incorporate activities that boost street life</li><li>• <b>Distinguish sub-areas</b> by looking at how a group of adjacent blocks' particular land use may inform the building types and public realm of the blocks' area</li></ul>
Include residential	<ul style="list-style-type: none"><li>• <b>Maximise existing residential allowances</b> to create artists live-work spaces as well as student housing for the planned educational institutes</li><li>• <b>Redefine mixed use</b> to explore how current land uses, even industrial ones, can include housing which can bring eyes on the streets</li><li>• <b>Adopt gradated zoning</b> to make some lands available for residential uses while maintaining city-serving industrial lands elsewhere</li><li>• <b>Distinguish sub-areas</b> by designing a sub-area with majority residential uses</li><li>• <b>Diversify building types</b> while knowing how the different uses and associated building type may integrate well with residential uses</li><li>• <b>Plan for energy precinct</b> becomes more probable when there are enough necessary waste and affluent produced to be converted to heat and power</li><li>• <b>Reduce VKT</b> is more possible when more workers can have jobs close to homes, hence reducing The Flats overall use of fossil fuels</li><li>• <b>Recognise growing visible minorities</b> and their views on home and housing needs</li></ul>
Encourage infills	<ul style="list-style-type: none"><li>• <b>Intensify land use through infills</b> to transform underutilised lands like carparks in industrial sites into offices, commercial units and retail</li><li>• <b>Maximise existing residential allowances</b> by building on underutilised lots, especially education institute lands, currently zoned to include housing</li><li>• <b>Redefine mixed use</b> by rezoning and/or subdividing lots with underutilised lands to allow for infill structures with new uses</li><li>• <b>Innovate green loops</b> by ensuring the uses of the existing buildings and the proposed infill buildings can form a close loop</li><li>• <b>Remediate environmental quality</b> by requiring the infill areas to include green features and/or undergo soil remediation</li></ul>
Densify arterials	<ul style="list-style-type: none"><li>• <b>Diversify building types</b> to create visual variety while creating more floorspace for non-industrial uses</li><li>• <b>Redefine mixed use</b> by increasing the allowable FSR to accommodate activities that boost street life</li><li>• <b>Adopt gradated zoning</b> by maintaining some city-serving industrial lands but also create more robust developments elsewhere along the same arterial</li><li>• <b>Plan new transit lines and stations</b> to service the increase number of residents and workers who will inhabit the densified arterials</li><li>• <b>Innovate green loops</b> that can use the waste and recyclables from arterial-fronting residences and businesses as productive raw materials</li><li>• <b>Plan for energy precinct</b> becomes more probable when there are enough necessary waste and affluent produced to be converted to heat and power</li><li>• <b>Reduce VKT</b> is more possible when more workers can have jobs close to homes, hence reducing The Flats overall use of fossil fuels</li><li>• <b>Remediate environmental quality</b> by requiring new developments to go perform soil remediation and/or include features to filter run-offs</li><li>• <b>Include co-design</b> to gather public desires for the adequate amount of density and height, as well as form and character, that can go into the arterials</li></ul>



"Accommodate"

(6) Lewis, 56.  
(7) Moughtin, Cliff, *Urban Design: Method and Techniques*, Oxford, UK: Elsevier Architectural Press, 1999, 122.  
(8) Moughtin, Cliff, *Urban Design: Green Dimensions*, Oxford, UK: Elsevier Architectural Press, 2005, 226.  
(9) Hester, Randolph T., *Design for Ecological Democracy*, Cambridge, MA: MIT Press, 2006, p.211-215.



4.1.3. Respect

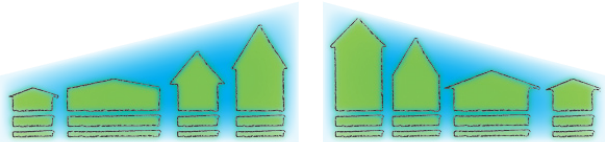
The Flats’ rich histories rooted in its industrial past should be respected in future developments. It is also at the nexus of different neighbourhoods, which histories, heritage, urban form and desires should be respected too. The Flats’ future identity may come from finding ways to pay homage to both its own histories and its surrounding neighbourhoods’ character and form. Urban design strategies deriving from this principle can explore ways to:

- **Preserve heritage:** Developments on lots with heritage buildings should incorporate these buildings into the overall design so as to showcase The Flats’ history. This can be done by repurposing the buildings. If keeping a building in its entirety compromises structural integrity then façade retention, at least, should be pursued. Concerning urban design, heritage elements can provide visual diversity and act as anchor points to an area’s character.<sup>10</sup>
- **Denote heritage gateways:** Heritage buildings, especially those at major intersections, should be brought to the foreground to denote a physical and psychological entrance to The Flats.<sup>11</sup> If the heritage building(s) are not immediately at a major intersection, developments around the heritage building(s) leading to the intersection may take on similar materials, form, colour and character as the heritage building(s) so as to lead pedestrians, cyclists and drivers eyes to the designated heritage buildings. Besides complementary character and form, a clear sight-line from the intersection to the heritage building(s) can be pursued.
- **Complement existing neighbourhoods:** Respect the height, form and character of the adjacent neighbourhoods’ buildings and street patterns, and find ways to allow a smooth transition into The Flats.<sup>12</sup> This is achievable by mirroring and responding to the height, mass, form and character of buildings at the edge of the adjacent neighbourhoods. Besides mirroring form and character, similar land-use and programs can be pursued to better stitch the edges and boundaries of neighbourhoods together as one cohesive street.
- **Link Heritage Necklace:** The Flats’ adjacent neighbourhoods all have strong heritage elements. A high degree of walkability along a distinct path from one heritage building/site to another in The Flats and its adjacent neighbourhoods links the immediate region’s neighbourhoods and their histories together. Special paving treatment can denote the designated paths linking these heritage sites.

Linking Respect’ Strategies with Opportunities

Each design strategy discussed here are informed by two or more opportunities. Each strategy can be expressed as an urban form – a particular design feature, a building typology, a single-block pattern, or a multiple-blocks morphology. The table below illustrates how the design strategies under the principle of ‘respect’ is informed by the opportunities outlined in the previous chapter.

Design Strategy	Informative Opportunities
Preserve heritage	<ul style="list-style-type: none"><li>• <b>Showcase industrial character</b> of The Flats with industrial moderne buildings that symbolise the area’s history</li><li>• <b>Create a series of centres</b> on sites with heritage buildings by using these building as the main organising element</li><li>• <b>Distinguish sub-areas</b> by marking out part of The Flats with higher concentration of heritage buildings as a heritage district</li><li>• <b>Denote entry points</b> to The Flats with heritage buildings at major intersections</li><li>• <b>Intensify land use through infill</b> on sites where heritage building stand with care to complement and not overshadow the heritage elements</li><li>• <b>Remediate environmental quality</b> by requiring redevelopment on heritage sites to include ecologically restorative features</li><li>• <b>Redefine mixed use</b> to explore how heritage buildings can fit multiple uses so as the activate the street life around it</li><li>• <b>Include co-design</b> to examine how heritage buildings and sites can expressed the wider concerns and desires of residents and workers around The Flats</li><li>• <b>Recognise growing visible minorities</b> and their views with regards to what a heritage rooted in a colonial industrial past mean to them</li><li>• <b>Partner with educational institutes</b> like UBC, ECU, SFU and BCIT to gather feedback on how the public rank the different heritage buildings/sites</li></ul>
Denote heritage gateways	<ul style="list-style-type: none"><li>• <b>Showcase industrial character</b> of The Flats by providing clear sightlines to the designated industrial heritage buildings</li><li>• <b>Denote entry points</b> to The Flats with heritage buildings at major intersections</li><li>• <b>Link a heritage necklace</b> by using special paving to denote a path from one heritage gateway to another</li><li>• <b>Plan new transit lines and stations</b> at or near these heritage gateways, in particular tram systems which is historically more aligned with industrial heritage</li></ul>
Complement existing neighbourhoods	<ul style="list-style-type: none"><li>• <b>Stitch neighbourhood boundaries</b> by responding to the character and form of nearby neighbourhood edges to produce visual-architectural continuity</li><li>• <b>Diversify building types</b> at The Flats with finer grain buildings that are more characteristic of many of the adjacent neighbourhoods</li><li>• <b>Redefine mixed use</b> to how lots across the street from adjacent neighbourhoods may be rezoned to better complement their programs and activities</li></ul>
Link up heritage necklace	<ul style="list-style-type: none"><li>• <b>Link a heritage necklace</b> by using special paving to denote a path from one heritage building to another</li><li>• <b>Showcase industrial character</b> of The Flats by having developments next to heritage buildings adopt complementary materials, character and form</li><li>• <b>Partner with educational institutes</b> like UBC, ECU, SFU and BCIT to gather public feedback/ knowledge on what existing buildings can be classed as heritage</li></ul>



“RESPECT”

(10) Moughtin, 1999, p.27-28.  
(11) Eco, Umberto, “Function and Sign: The Semiotics of Architecture”, in *Rethinking Architecture: A Reader in Cultural Theory* (ed. Neil Lech), London, UK & New York: Routledge, 1997, p.185.  
(12) Moughtin, 2003, p.42.



4.1.4. Restore

Restoring environmental well-being is a necessity when the aim is to bring more people to work and live in The Flats. Environmental well-being entails not only cleaner air, water and energy, but also the creation of businesses that benefit the environment. Restoring The Flats’ health means not only preventing further environmental degradation but creating a living system that can reverse environmental damage done over the last century. Urban design strategies deriving from this principle can explore ways to:

- **Produce Resilient Sources:** To make The Flats more self-reliant for water and energy, green features can be pursued. For example, rain-barrels can be integral design features in a plaza, or even be incorporated into a building design. Living walls can be installed especially on necessary blank wall faces that hide mechanical systems or provide privacy. Moreover, living walls soften the visual monotony that can be caused by a higher wall-to-window ratio necessary for minimising heating loss.<sup>13</sup> New developments, especially industrial and office buildings with larger floorplates, can include solar panels and green roofs. Connection to existing and future district energy centres can also be written into future structure plans and even individual development permits.
- **Mitigate Hazards:** Given The Flats’ flooding and ponding risks, an adequate treatment of run-offs is important. As such mitigative features of all scales should be pursued. On a block scale, a network of swales and pervious paving that can absorb and filter run-offs can be considered. On a multi-block scale, these swales can be channelled to larger wetlands and retention ponds.<sup>14</sup>
- **Integrate land uses to reduce waste:** Pair businesses where one business’s by-products can become the raw materials for another business. For example, restaurants can be sited near composting businesses. Building design and zoning should encourage this integration of uses. This strategy complements the earlier mentioned strategy to accommodate mixed uses through mixed building typologies.<sup>15</sup>
- **Organise site around green infrastructure:** Rather than treating green infrastructures as ‘add-ons’, they can become a central form from which a development is organised and designed around.<sup>16</sup> For example, a green spine created on disused railyardsbecome an element from which adjacent developments’ site design can be connected to. In other words, a green feature can help form the spatial identity of The Flats’ various developments

Linking Respect’ Strategies with Opportunities

Each design strategies discussed here are informed by two or more opportunities. Each strategy can be expressed as an urban form – a particular design feature, a building typology, a single-block pattern, or a multiple-blocks morphology. The table below illustrates how the design strategies under the principle of ‘restore’ is informed by the opportunities outlined in the previous chapter.

Design Strategy	Informative Opportunities
Produce Resilient Sources	<ul style="list-style-type: none"><li>• <b>Opportune productive roofs</b> by capitalising on industrial and office buildings’ large roof-plates as sites for green-roofs and solar panels</li><li>• <b>Plan for energy precinct</b> becomes more probable when there are enough necessary waste and affluent produced to be converted to heat and power</li><li>• <b>Encourage biomass energy</b> by installing a processing centre in industrial zones which are also next to rail lines which can bring in waste from the region</li><li>• <b>Partner with educational institutes</b> like UBC, ECU, SFU and BCIT to run workshops on resilient communities and urban design</li></ul>
Mitigate hazards	<ul style="list-style-type: none"><li>• <b>Opportune productive roofs</b> by using green-roofs which can greatly reduce run-offs which can lead to flooding, ponding and leaching</li><li>• <b>Remediate environmental quality</b> by mandating new or re-developments to include design features such as rain gardens and swales that mitigate hazards</li><li>• <b>Encourage restorative greenways</b> by tying disused rail yards together with adjacent lots to create a bigger hazard-mitigating feature</li><li>• <b>Partner with educational institutes</b> like UBC, ECU, SFU and BCIT to raise awareness about The Flats’ potential hazards such as flooding and sea-level rise</li></ul>
Integrate land uses to reduce waste	<ul style="list-style-type: none"><li>• <b>Innovate green loops</b> that can use the waste and recyclables from one business as productive raw materials for another business</li><li>• <b>Redefine mixed use</b> to explore how integrated land uses can be sited adjacent to each other, or how they can even be within the same building</li><li>• <b>Encourage biomass energy</b> by installing a processing centre in industrial zones which can collect waste from The Flats and its nearby neighbourhoods</li><li>• <b>Showcase industrial character</b> of The Flats with a contemporary biomass energy plant or recycling plant that emit little or no waste or smells</li></ul>
Organise site around green infrastructure	<ul style="list-style-type: none"><li>• <b>Create a series of centres</b> with one based around green infrastructure like a major bio-retention pond or even a district energy centre</li><li>• <b>Denote entry points</b> to The Flats with major green infrastructure that can be paired with heritage buildings to show The Flats is both ‘old’ and ‘new’</li><li>• <b>Encourage restorative greenways</b> that can act as a green spine along which wetlands, bioswales, and walk- and bike-ways are organised</li><li>• <b>Build pedestrian-bicycle bridges</b> that improve connections but also act as an organising element for the building and street patterns around it</li><li>• <b>Innovate environment-responsive architecture</b> by designing publicly accessible spaces such as eco-decks and green-roofs over above-grade carparks</li></ul>



(13) [http://www.solarbuildings.ca/c/sbn/file\\_db/Doc\\_File\\_e/Window%20to%20wall%20ratios%20and%20commercial%20building%20energy.pdf](http://www.solarbuildings.ca/c/sbn/file_db/Doc_File_e/Window%20to%20wall%20ratios%20and%20commercial%20building%20energy.pdf) (Accessed: June 29th 2011)

(14) Watson, Donald & Michele Adams, *Design for Flooding: Architecture, Landscape and Urban Design for Resilience to Climate Change*, Hoboken, NJ: Wiley and Sons, 2011, p.99.

(15) Hester, p.31-21.

(16) [http://library.oregonmetro.gov/files/greenspine\\_no.10\\_web.pdf](http://library.oregonmetro.gov/files/greenspine_no.10_web.pdf) (Accessed: May 10th, 2011)

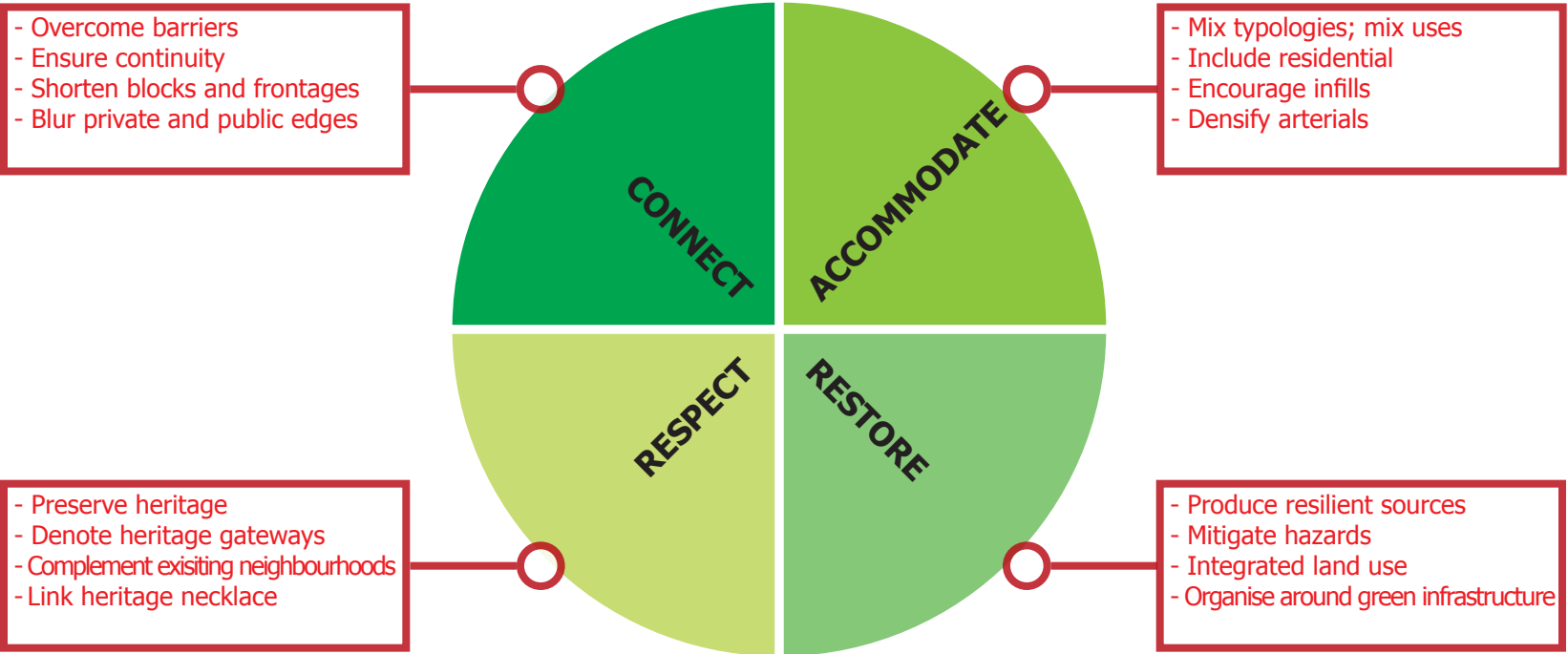


Typologies and Patterns

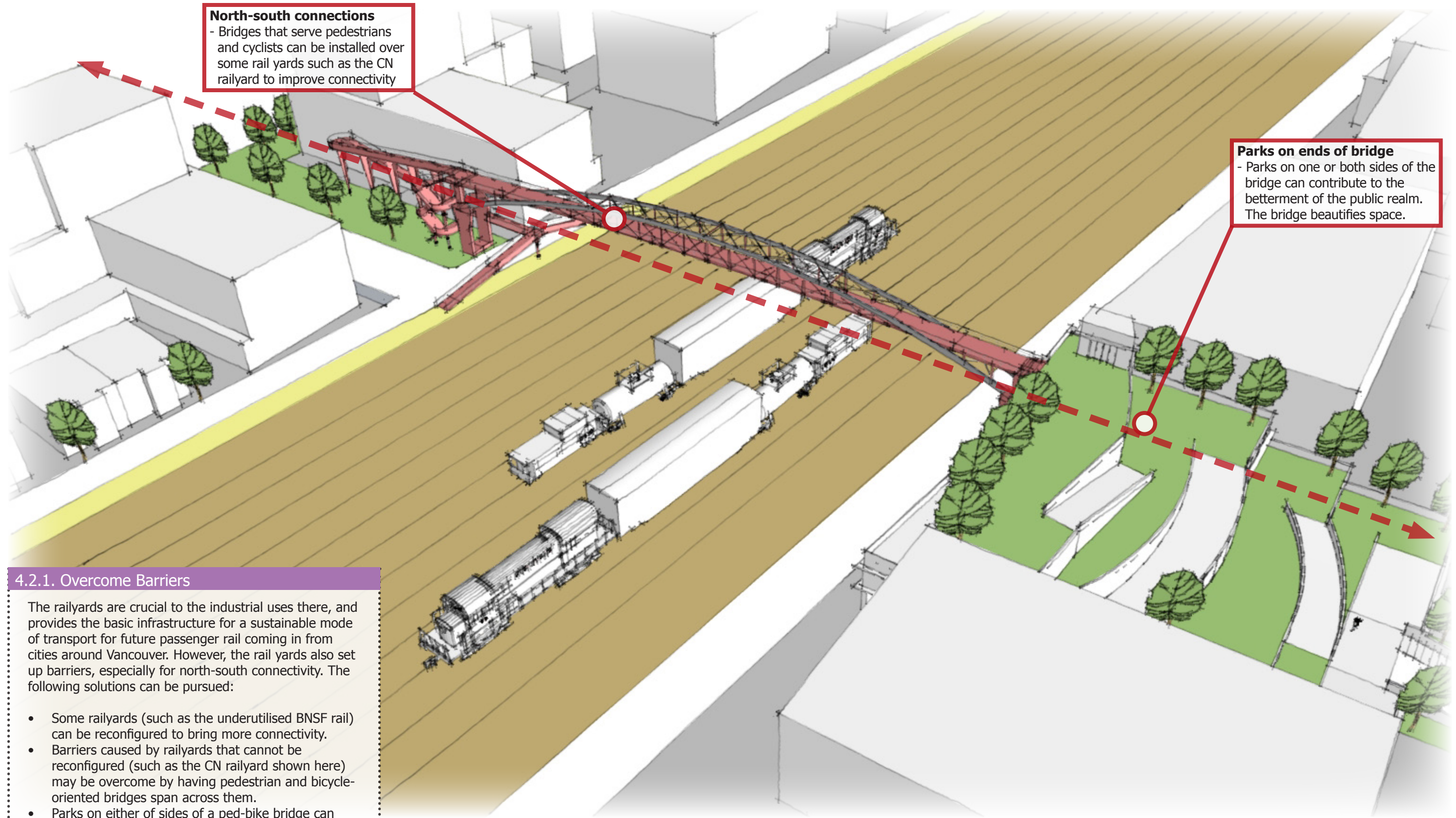
The typologies and patterns presented here are informed from the abovementioned four principles, associated strategies and informing opportunities. Each type or pattern is essentially a visualisation of what a strategy can be in terms of how a building, a block, or a system of multiple blocks can be developed.

While each of the typology or pattern is initially developed from a particular site within The Flats, they are generalised to be applicable to other sites in The Flats with similar conditions like lot size, proximity to rail yards, adjacent programming, heritage value and/or capability to incorporate green infrastructures.

To recap there are the sixteen types and patterns based on the strategies shown on the diagram on the right:





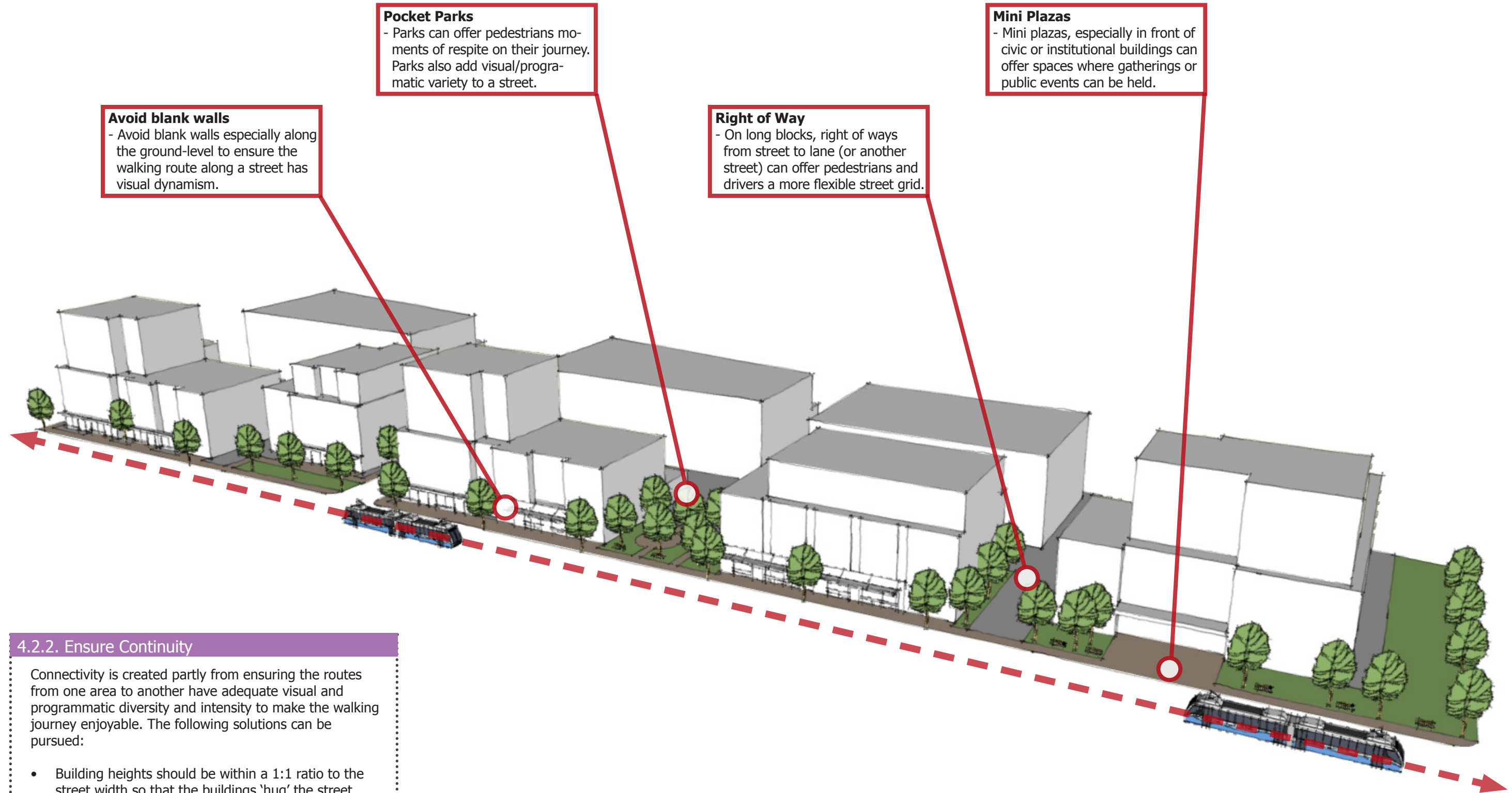


#### 4.2.1. Overcome Barriers

The railyards are crucial to the industrial uses there, and provides the basic infrastructure for a sustainable mode of transport for future passenger rail coming in from cities around Vancouver. However, the rail yards also set up barriers, especially for north-south connectivity. The following solutions can be pursued:

- Some railyards (such as the underutilised BNSF rail) can be reconfigured to bring more connectivity.
- Barriers caused by railyards that cannot be reconfigured (such as the CN railyard shown here) may be overcome by having pedestrian and bicycle-oriented bridges span across them.
- Parks on either of sides of a ped-bike bridge can be integrated so the bridge will also contribute to the betterment of the public realm besides being utilitarian.



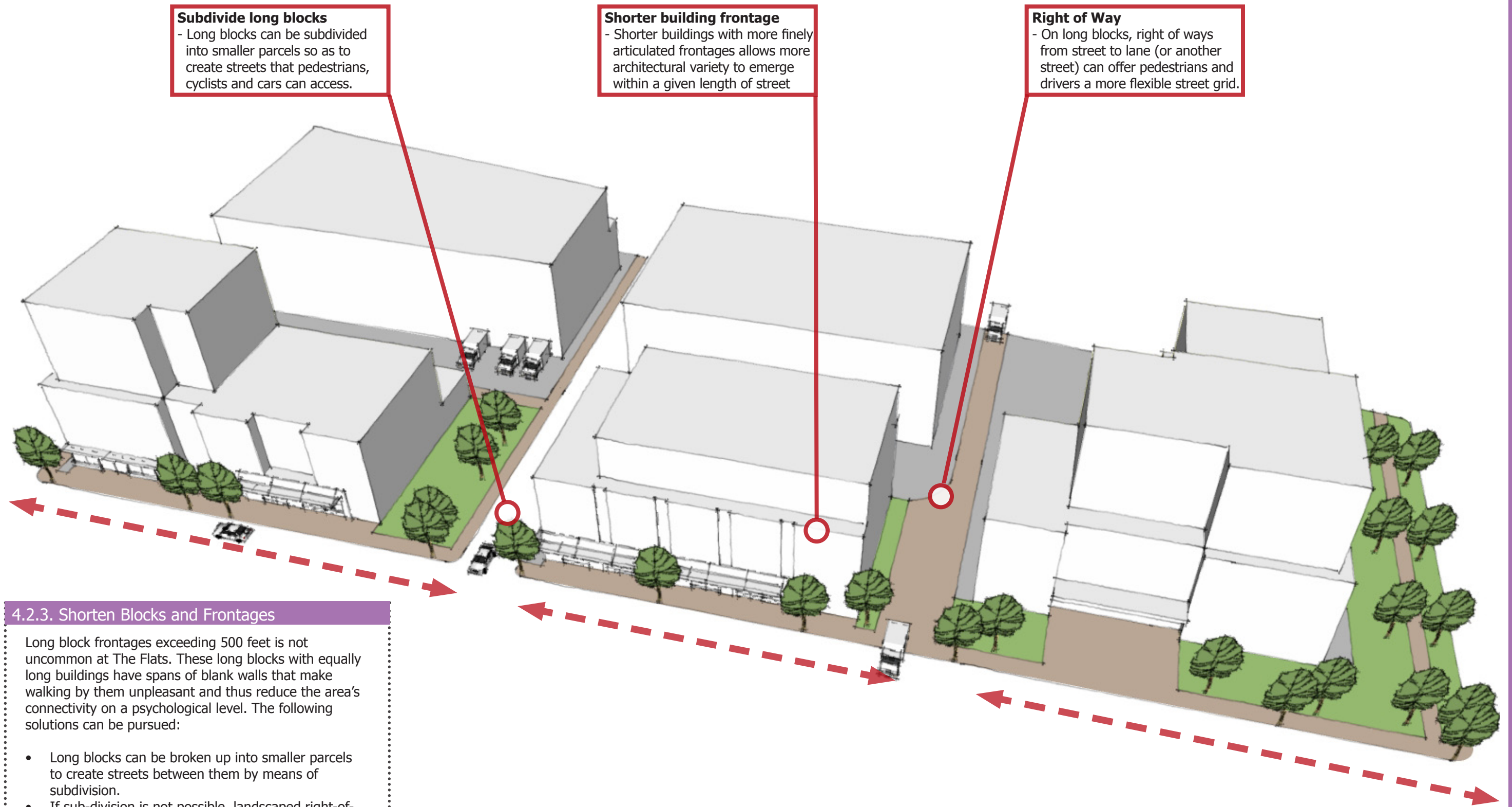


#### 4.2.2. Ensure Continuity

Connectivity is created partly from ensuring the routes from one area to another have adequate visual and programmatic diversity and intensity to make the walking journey enjoyable. The following solutions can be pursued:

- Building heights should be within a 1:1 ratio to the street width so that the buildings 'hug' the street while still maintaining an adequate human scale.
- It also means avoiding blank walls when possible; instead curtain-walls and shop windows amongst other façade articulations can provide visual dynamism and permeability between the street and the buildings' interiors.
- Street trees, street furniture and even pocket parks can help make a street a continuous length of varied spaces and programs.



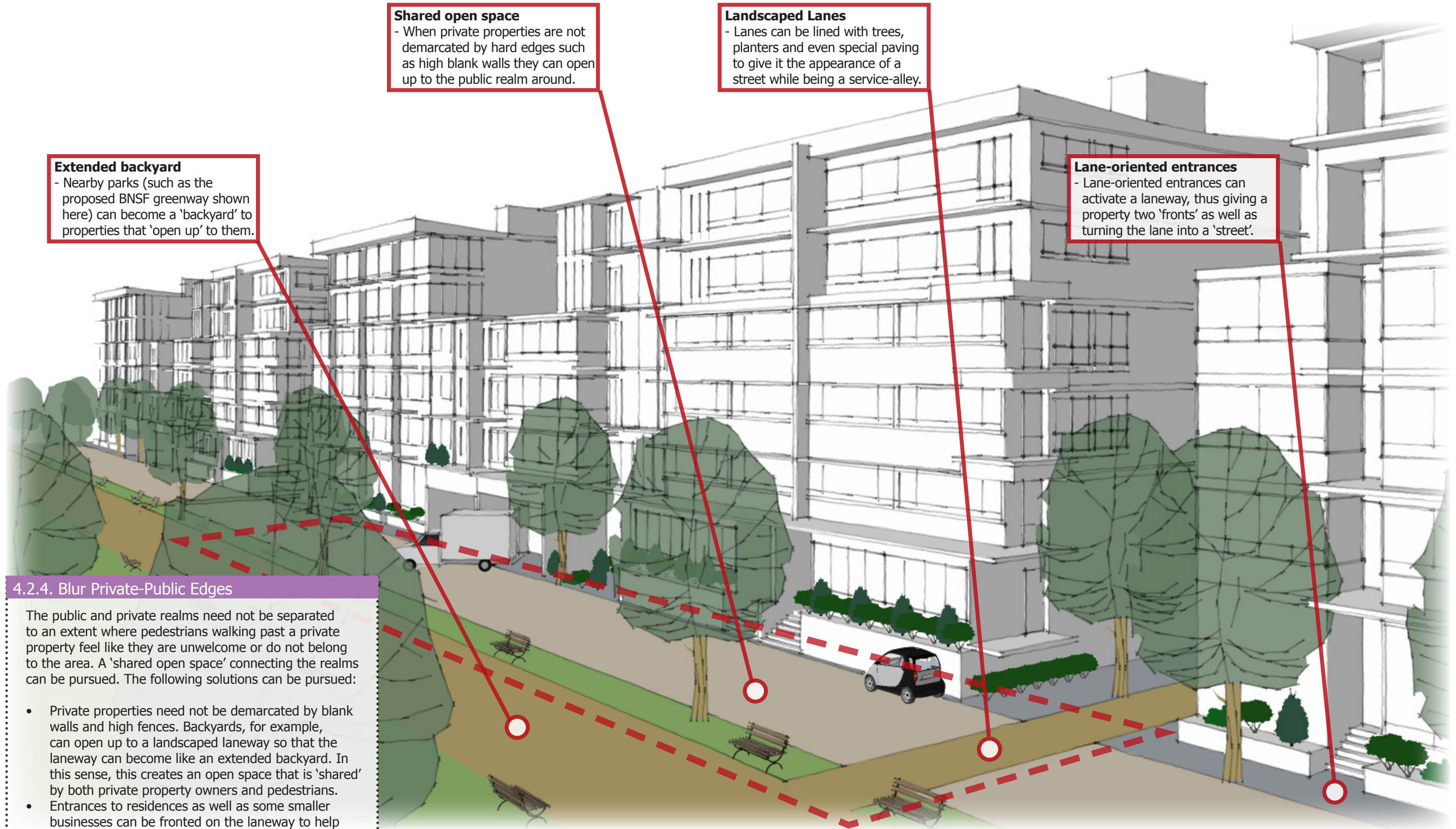


#### 4.2.3. Shorten Blocks and Frontages

Long block frontages exceeding 500 feet is not uncommon at The Flats. These long blocks with equally long buildings have spans of blank walls that make walking by them unpleasant and thus reduce the area's connectivity on a psychological level. The following solutions can be pursued:

- Long blocks can be broken up into smaller parcels to create streets between them by means of subdivision.
- If sub-division is not possible, landscaped right-of-ways through the blocks and shorter buildings can be explored to offer pedestrian a more flexible street pattern to walk around.
- Shorter buildings can mean a greater number of architecturally diverse (yet still complementary) buildings can populate a certain length of a block or street, lending to greater visual diversity.





#### 4.2.4. Blur Private-Public Edges

The public and private realms need not be separated to an extent where pedestrians walking past a private property feel like they are unwelcome or do not belong to the area. A 'shared open space' connecting the realms can be pursued. The following solutions can be pursued:

- Private properties need not be demarcated by blank walls and high fences. Backyards, for example, can open up to a landscaped laneway so that the laneway can become like an extended backyard. In this sense, this creates an open space that is 'shared' by both private property owners and pedestrians.
- Entrances to residences as well as some smaller businesses can be fronted on the laneway to help activate such shared spaces.
- Privacy and safety can be maintained by softer edges such as hedge rows and lattice fences instead of high concrete walls.

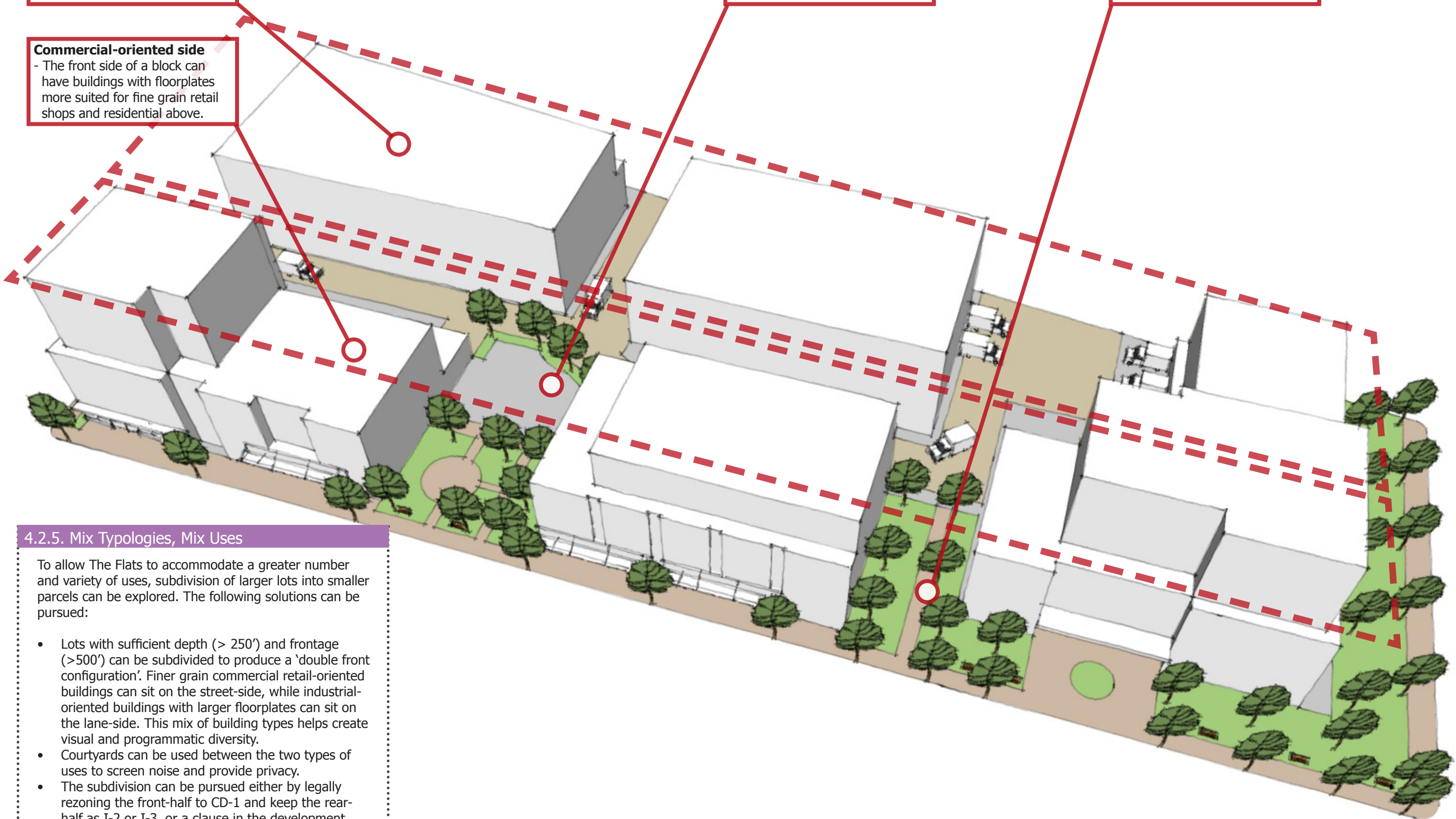


**Industrial-oriented side**  
- The rear side of a block can have buildings with larger floorplates to accommodate industrial and some office uses.

**Commercial-oriented side**  
- The front side of a block can have buildings with floorplates more suited for fine grain retail shops and residential above.

**Courtyards as separation**  
- Softer screening devices such as trees within a courtyard can be used provide privacy and noise reduction.

**Right of way**  
- Landscaped right of ways from the street can be used by employees going to the industrial side



#### 4.2.5. Mix Typologies, Mix Uses

To allow The Flats to accommodate a greater number and variety of uses, subdivision of larger lots into smaller parcels can be explored. The following solutions can be pursued:

- Lots with sufficient depth (> 250') and frontage (>500') can be subdivided to produce a 'double front configuration'. Finer grain commercial retail-oriented buildings can sit on the street-side, while industrial-oriented buildings with larger floorplates can sit on the lane-side. This mix of building types helps create visual and programmatic diversity.
- Courtyards can be used between the two types of uses to screen noise and provide privacy.
- The subdivision can be pursued either by legally rezoning the front-half to CD-1 and keep the rear-half as I-2 or I-3, or a clause in the development permit and/or tax-break incentives may be explored to ensure this diversity occurs.

**Residential above commercial**

- Mixed-use buildings can be pursued, especially along major arterials with adequate bus, skytrain and tram services.

**Work close to home**

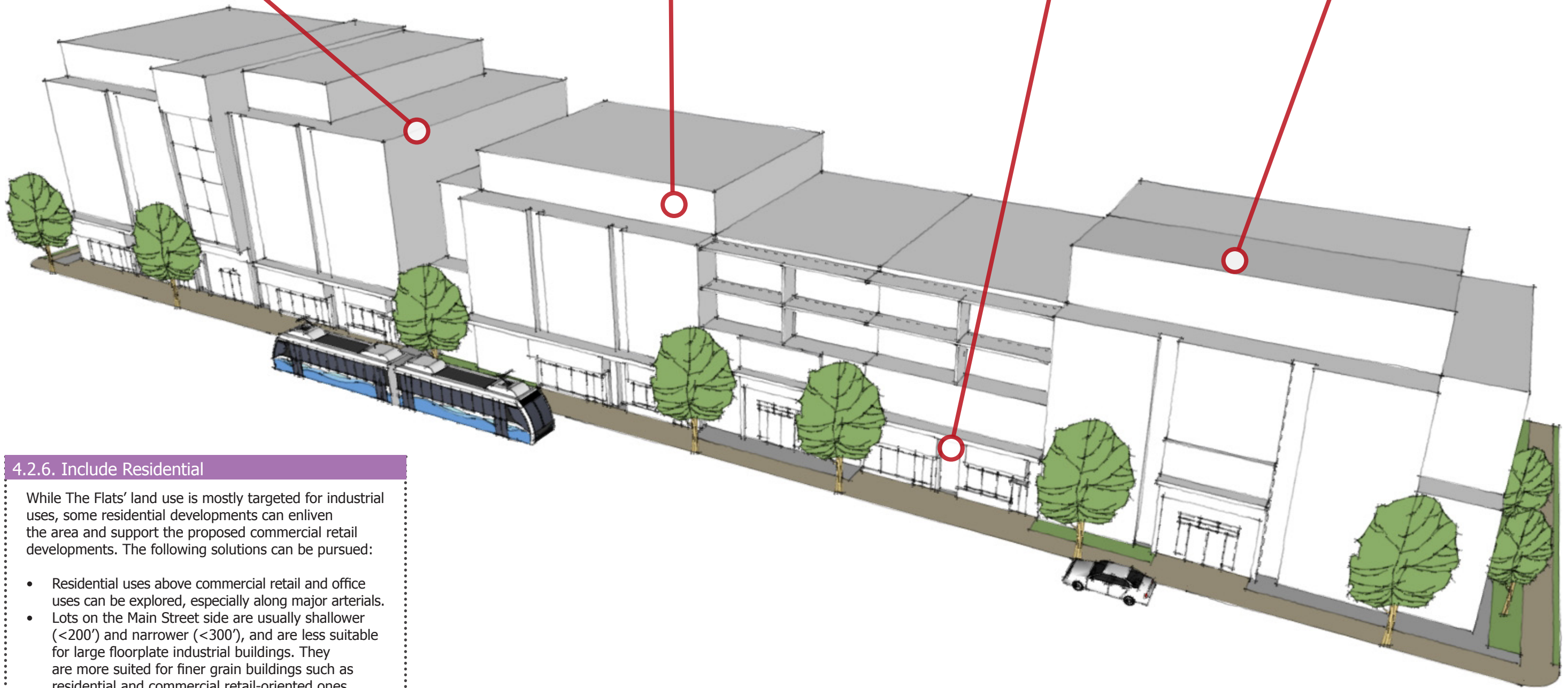
- By providing more residences in The Flats, it can mean more of its future workers can live near to work hence reducing VKT

**Fine grain commercial retail**

- The shops on the ground level should be finer grain to fit with the commercial spaces in the adjacent neighbourhoods.

**Adequate heights**

- Building heights should complement the adjacent neighbourhoods' low- to mid-rise form.

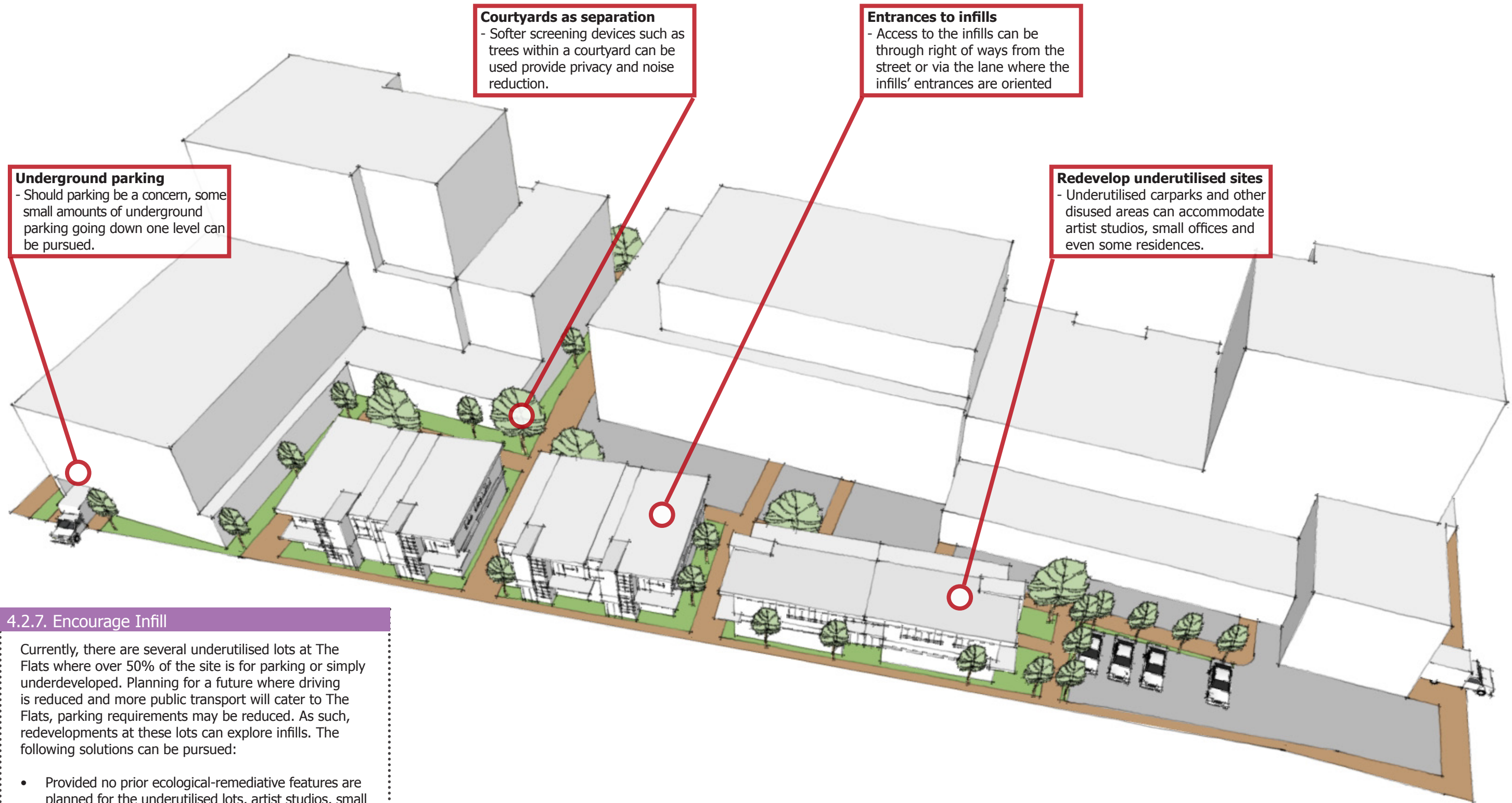


4.2.6. Include Residential

While The Flats' land use is mostly targeted for industrial uses, some residential developments can enliven the area and support the proposed commercial retail developments. The following solutions can be pursued:

- Residential uses above commercial retail and office uses can be explored, especially along major arterials.
- Lots on the Main Street side are usually shallower (<200') and narrower (<300'), and are less suitable for large floorplate industrial buildings. They are more suited for finer grain buildings such as residential and commercial retail-oriented ones.
- In terms of land use the Main Street side can afford to have greater residential uptake in part to provide programmatic continuity between Mount Pleasant and Chinatown/Strathcona. And, in part to alleviate the residential development pressure on the Clark Drive side, so as to allow light industrial uses like storage and wholesalers to continue.





#### 4.2.7. Encourage Infill

Currently, there are several underutilised lots at The Flats where over 50% of the site is for parking or simply underdeveloped. Planning for a future where driving is reduced and more public transport will cater to The Flats, parking requirements may be reduced. As such, redevelopments at these lots can explore infills. The following solutions can be pursued:

- Provided no prior ecological-remediation features are planned for the underutilised lots, artist studios, small office structures and even boutique manufacturers such as clothiers can be pursued.
- The underutilised lots can either be subdivided, or the redevelopment can be rezoned as an unique CD-1, or a future iteration of I-3 that makes provisions for mixed use infill structures.
- Clauses in a development permit and/or tax incentive can be pursued to encourage developers to do less parking and instead build infill structures.

#### Tree-lined streets

- Tree-lined streets with adequate amount of street furniture can make an arterial more liveable by offering spaces of respite.

#### Public transport

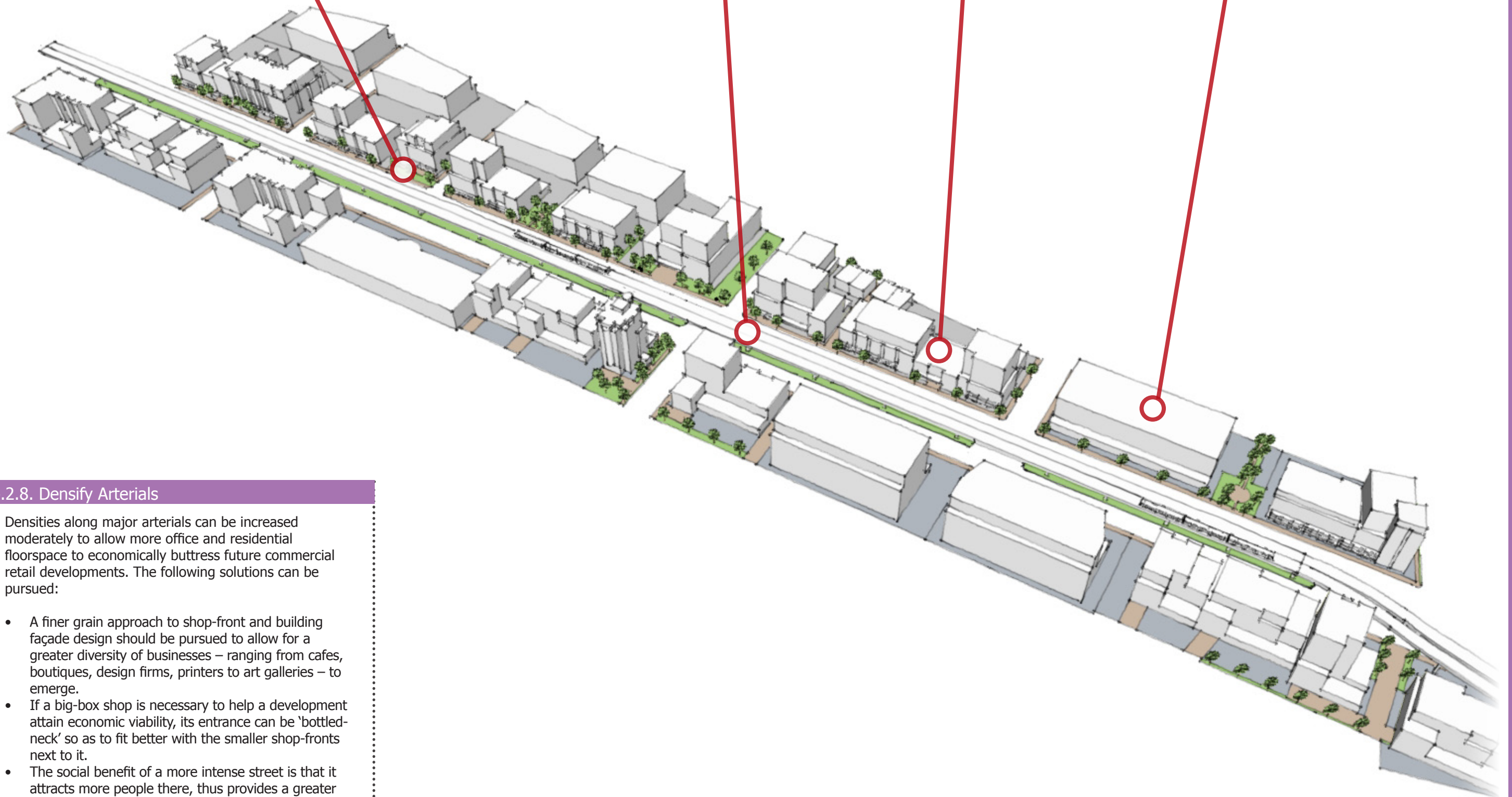
- Trams, buses and skytrains are all important to make an arterial liveable as they connect its residents to a wider area.

#### Residences along arterials

- Residences along arterials (such as Terminal Ave shown here) can help economically buttress the future commercial developments.

#### Big-box shop, small entrance

- Big box shops can have 'bottled-neck' entrances so that finer grain shops can line the streets.

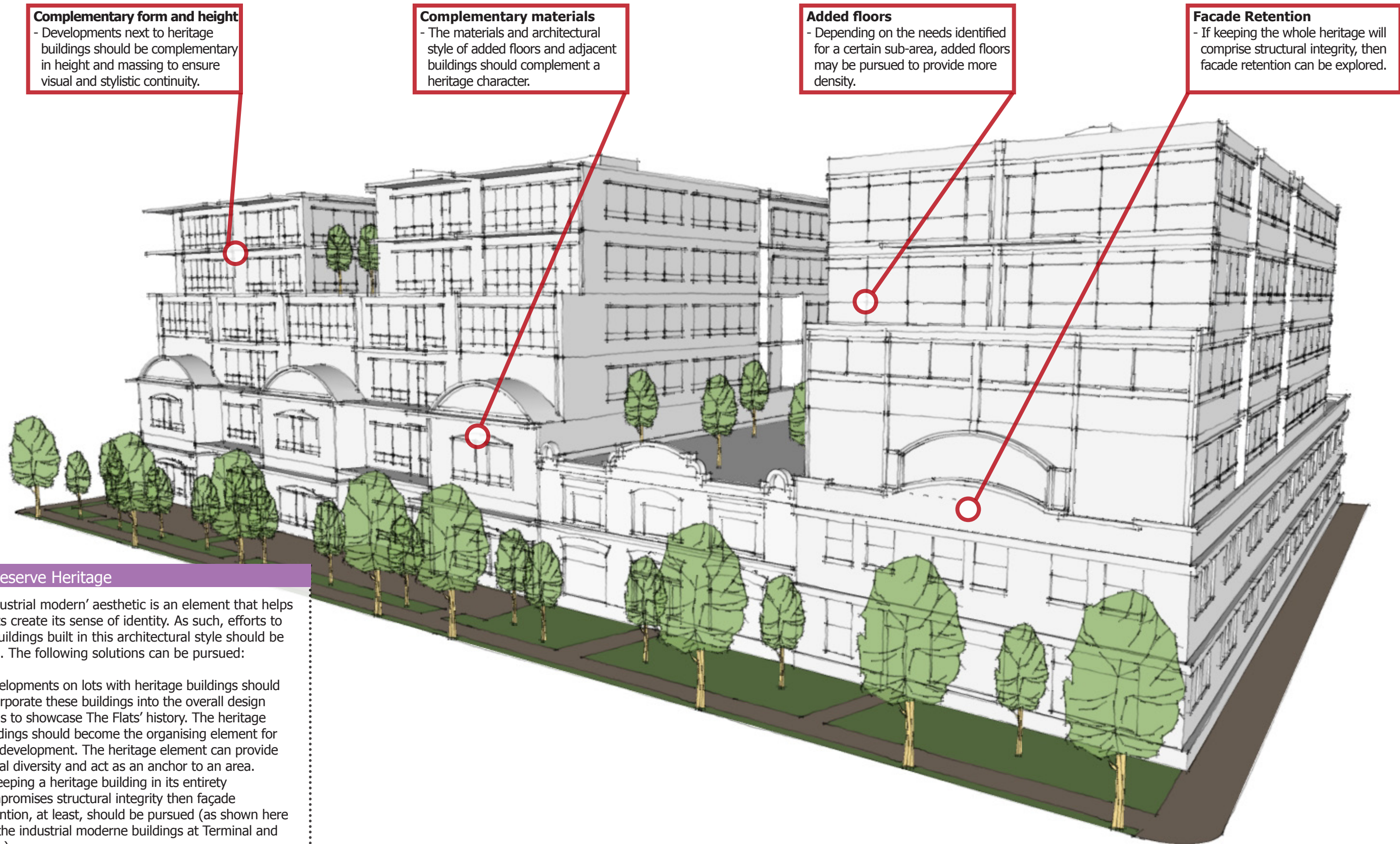


#### 4.2.8. Densify Arterials

Densities along major arterials can be increased moderately to allow more office and residential floorspace to economically buttress future commercial retail developments. The following solutions can be pursued:

- A finer grain approach to shop-front and building façade design should be pursued to allow for a greater diversity of businesses – ranging from cafes, boutiques, design firms, printers to art galleries – to emerge.
- If a big-box shop is necessary to help a development attain economic viability, its entrance can be 'bottled-neck' so as to fit better with the smaller shop-fronts next to it.
- The social benefit of a more intense street is that it attracts more people there, thus provides a greater opportunity for interaction and cross socio-economic and cultural understanding.





#### 4.2.9. Preserve Heritage

The 'industrial modern' aesthetic is an element that helps The Flats create its sense of identity. As such, efforts to retain buildings built in this architectural style should be pursued. The following solutions can be pursued:

- Developments on lots with heritage buildings should incorporate these buildings into the overall design so as to showcase The Flats' history. The heritage buildings should become the organising element for the development. The heritage element can provide visual diversity and act as an anchor to an area.
- If keeping a heritage building in its entirety compromises structural integrity then façade retention, at least, should be pursued (as shown here for the industrial moderne buildings at Terminal and Main).
- Existing and future buildings of socio-cultural and architectural merit can be added to the heritage list.



#### Park and open spaces

- Parks and open spaces at a gateway allows people to take a breath to dwell and appreciate the surroundings.

#### Link up to transport nodes

- Gateways to The Flats can be strengthened by the presence of transport nodes such as tram-stops skytrain and buses.

#### Green street medians

- Green street medians not only soften the area but also acts as a processional 'guide' into The Flats. They define a clear axis.

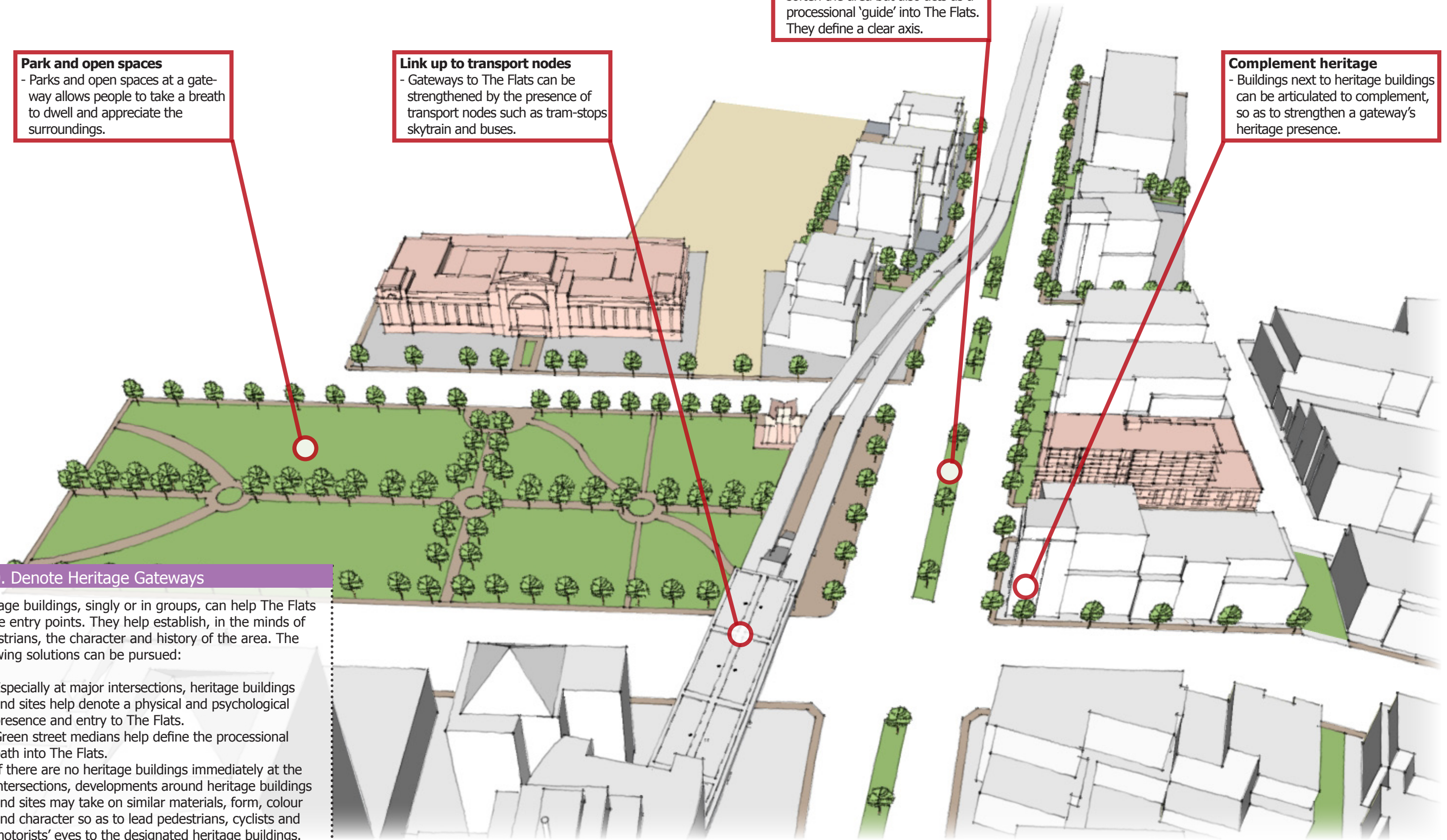
#### Complement heritage

- Buildings next to heritage buildings can be articulated to complement, so as to strengthen a gateway's heritage presence.

#### 4.2.10. Denote Heritage Gateways

Heritage buildings, singly or in groups, can help The Flats define entry points. They help establish, in the minds of pedestrians, the character and history of the area. The following solutions can be pursued:

- Especially at major intersections, heritage buildings and sites help denote a physical and psychological presence and entry to The Flats.
- Green street medians help define the processional path into The Flats.
- If there are no heritage buildings immediately at the intersections, developments around heritage buildings and sites may take on similar materials, form, colour and character so as to lead pedestrians, cyclists and motorists' eyes to the designated heritage buildings.
- A clear sightline to the heritage buildings and sites should be maintained from at least a few blocks away from a designated gateway intersection.





**Complementary programming**

- Programming, especially on the ground floor, should be similar to those in adjacent neighbourhoods to ensure programmatic continuity.

**Create right of ways**

- Long blocks at The Flats can be broken up to bring the finer street network of adjacent neighbourhoods into The Flats.

**Complement adjacent form**

- Buildings on the edge with other neighbourhoods should have form, heights and character that fits to create a smooth transition.

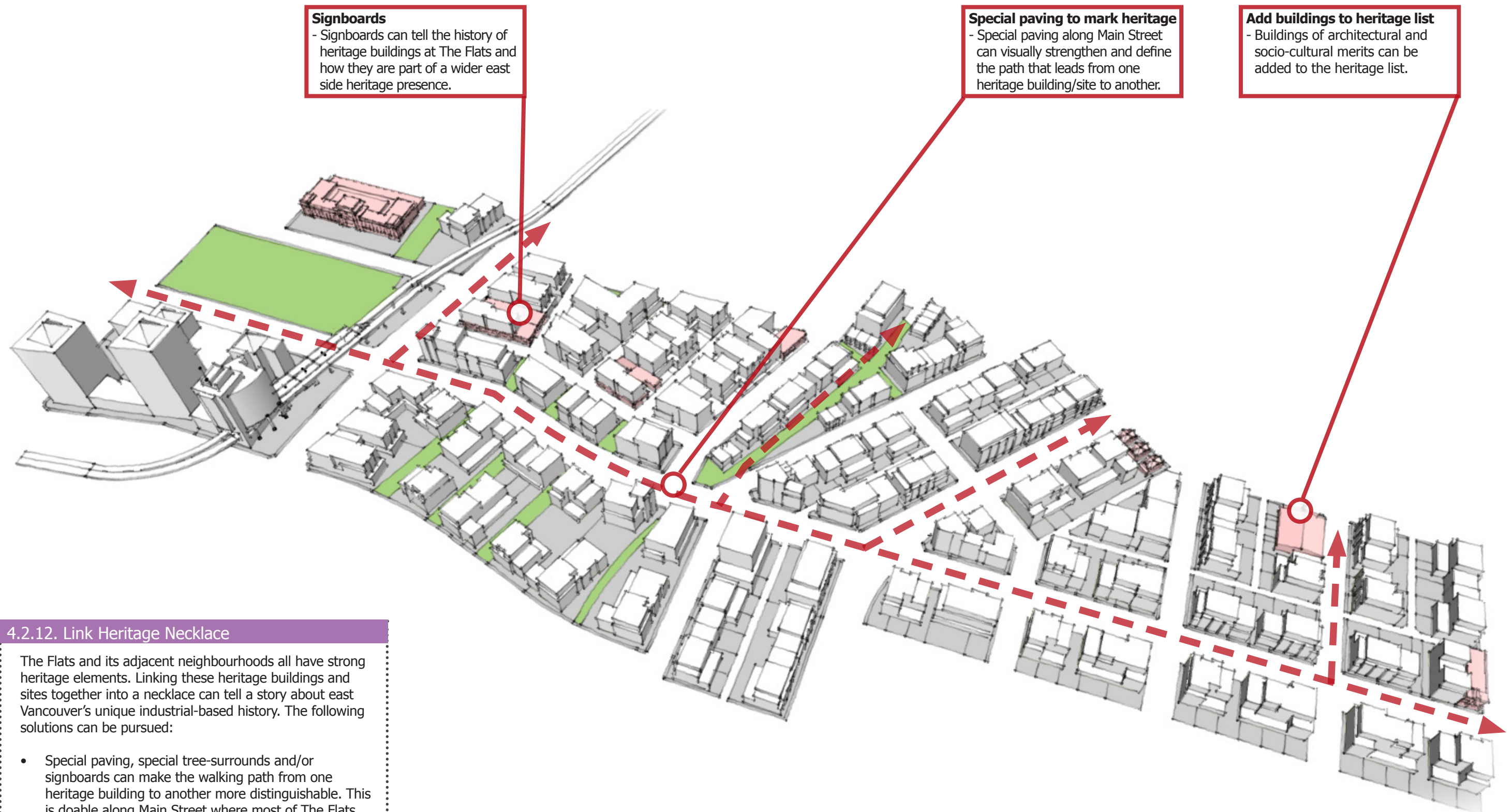
4.2.11. Complement Existing Neighbourhoods

The Flats sit amongst several established neighbourhoods. In this regard it is important new developments at The Flats complement them. The following solutions can be pursued:

- Respect the height, form and character of the surrounding neighbourhoods' buildings (such as mid-rise slab-form residential buildings at Mt. Pleasant shown on the rightside of the illustration).
- If taller buildings are to be pursued at the edges between The Flats and other neighbourhoods, the height difference should 'step-up' gradually instead of overshadowing the mid-rise character around.
- The Flats currently has longer blocks; breaking them up can help bring in the finer grain street networks around (like those in Mount Pleasant).
- Land use and programs on The Flats' side should complement the surrounding neighbourhoods.







#### 4.2.12. Link Heritage Necklace

The Flats and its adjacent neighbourhoods all have strong heritage elements. Linking these heritage buildings and sites together into a necklace can tell a story about east Vancouver's unique industrial-based history. The following solutions can be pursued:

- Special paving, special tree-surrounds and/or signboards can make the walking path from one heritage building to another more distinguishable. This is doable along Main Street where most of The Flats and its adjacent neighbourhoods' heritage buildings and sites are located. These special paving and tree surrounds can be extended on streets that lead to heritage buildings away from Main Street.
- The aim is to physically link The Flats to other neighbourhoods like Mt. Pleasant, Chinatown and Strathcona by linking their unique heritage elements.
- Buildings of architectural and socio-cultural merits can be added to the heritage list.



#### Rain-Barrels

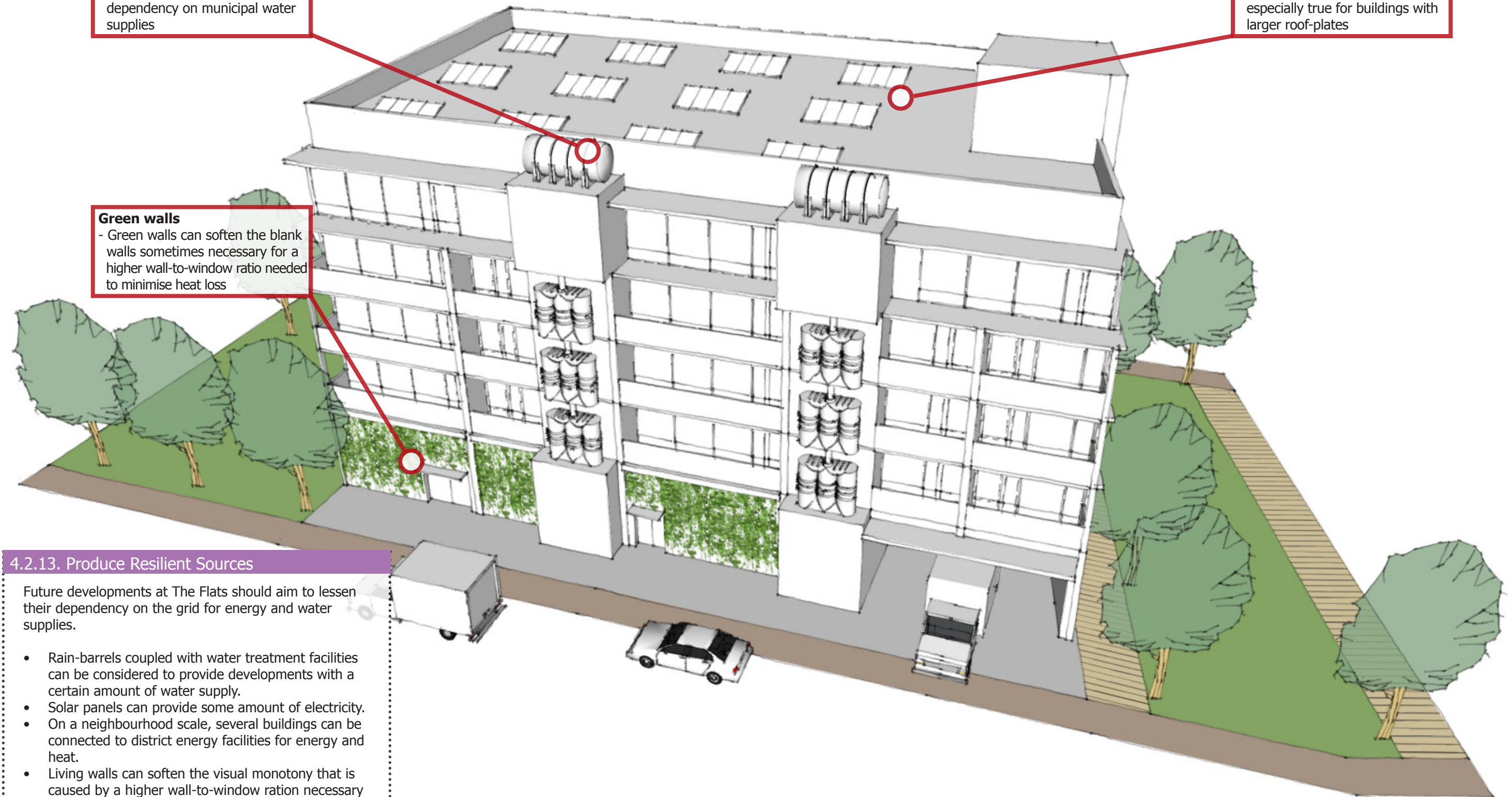
- Rain-barrels can help a building and even a wider area reduce dependency on municipal water supplies

#### Solar Panels

- Solar panels can provide some amount of electricity. This is especially true for buildings with larger roof-plates

#### Green walls

- Green walls can soften the blank walls sometimes necessary for a higher wall-to-window ratio needed to minimise heat loss

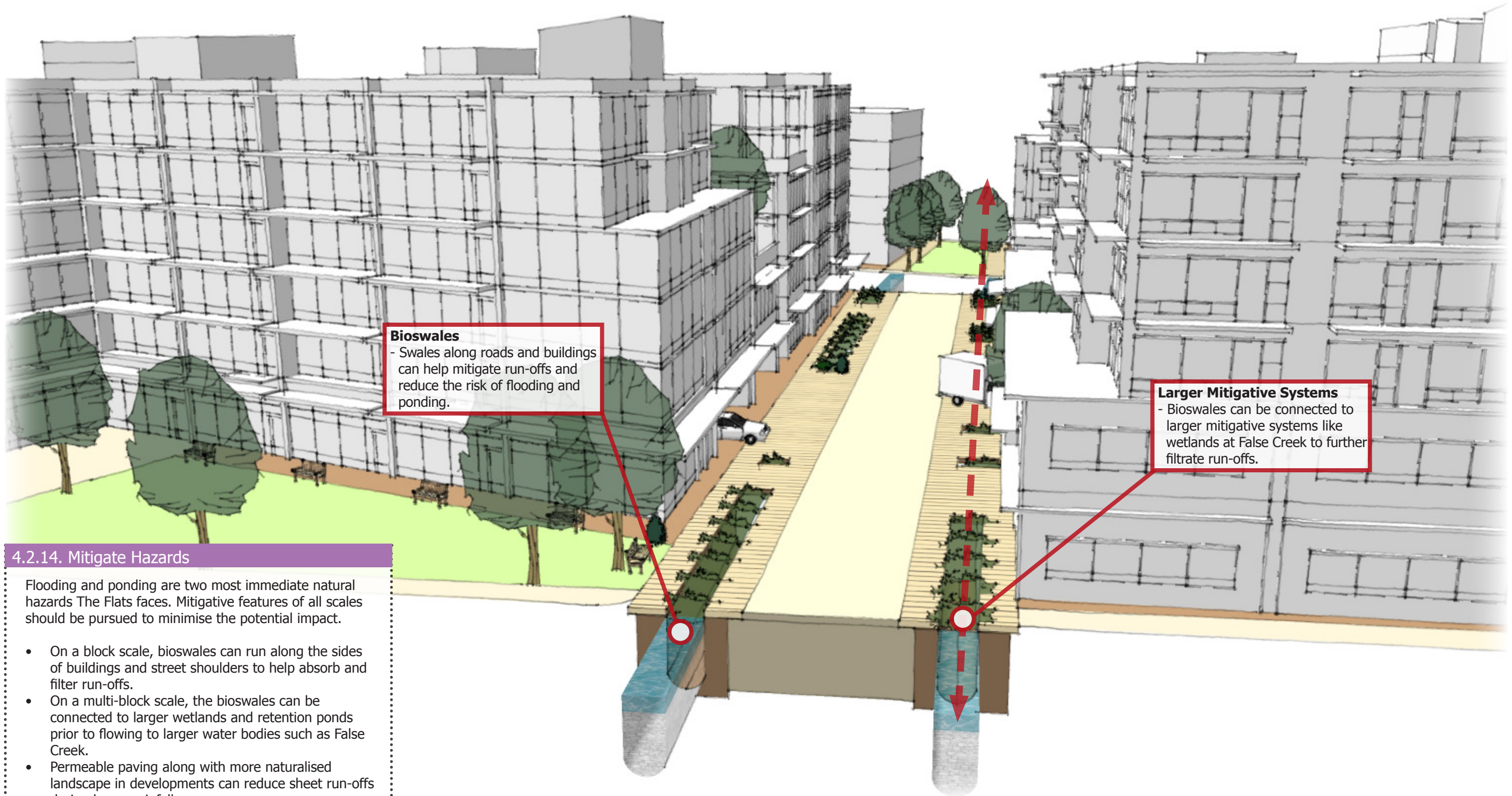


#### 4.2.13. Produce Resilient Sources

Future developments at The Flats should aim to lessen their dependency on the grid for energy and water supplies.

- Rain-barrels coupled with water treatment facilities can be considered to provide developments with a certain amount of water supply.
- Solar panels can provide some amount of electricity.
- On a neighbourhood scale, several buildings can be connected to district energy facilities for energy and heat.
- Living walls can soften the visual monotony that is caused by a higher wall-to-window ration necessary for minimising heat loss.
- The 'functionalist' look of the above hardware can become part of The Flats' 'look'.





#### 4.2.14. Mitigate Hazards

Flooding and ponding are two most immediate natural hazards The Flats faces. Mitigative features of all scales should be pursued to minimise the potential impact.

- On a block scale, bioswales can run along the sides of buildings and street shoulders to help absorb and filter run-offs.
- On a multi-block scale, the bioswales can be connected to larger wetlands and retention ponds prior to flowing to larger water bodies such as False Creek.
- Permeable paving along with more naturalised landscape in developments can reduce sheet run-offs during heavy rainfall.



**Reduce Waste**

- The waste from restaurants can be processed at nearby compost businesses, and the compost can fertilise the urban farms

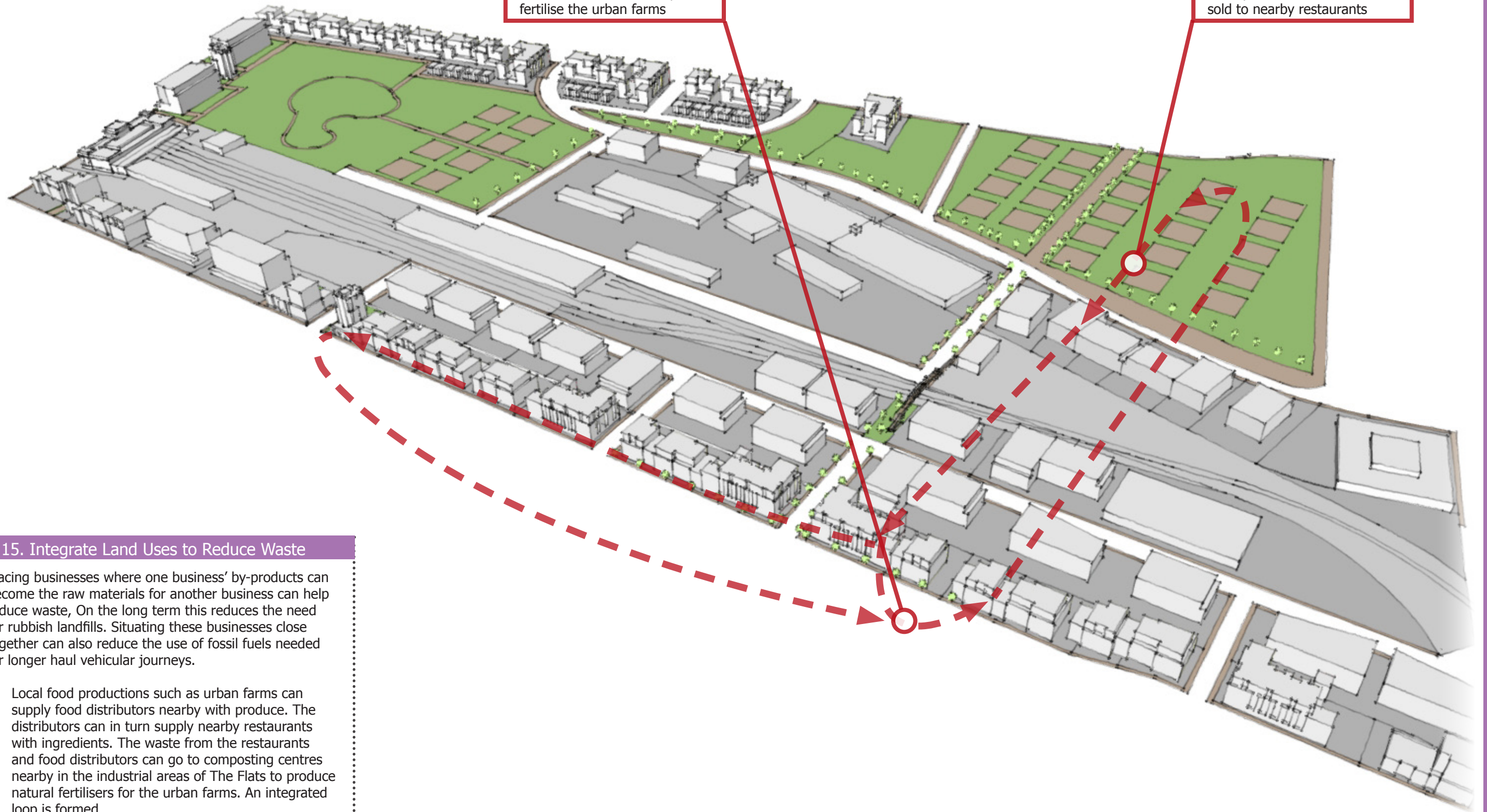
**Intergrated Businesses**

- Produce grown at the urban farms can be distributed at nearby wholesalers, and in turn sold to nearby restaurants

**4.2.15. Integrate Land Uses to Reduce Waste**

Placing businesses where one business' by-products can become the raw materials for another business can help reduce waste. On the long term this reduces the need for rubbish landfills. Situating these businesses close together can also reduce the use of fossil fuels needed for longer haul vehicular journeys.

- Local food productions such as urban farms can supply food distributors nearby with produce. The distributors can in turn supply nearby restaurants with ingredients. The waste from the restaurants and food distributors can go to composting centres nearby in the industrial areas of The Flats to produce natural fertilisers for the urban farms. An integrated loop is formed.







#### Green Spine

- Neighbourhoods can be organised around a green spine, which can act as a 'backyard' to nearby developments

#### 4.2.16. Organise around green infrastructure

Rather than treating green infrastructure as 'add-ons', they can become the central feature from which site/ neighbourhood design and public realm treatments are anchored upon.

- Green spines can be created from disused railyards. These spines improve not only ecological well-being but can help strengthen an area's spatial identity.
- The green spines can be connected to green fingers nearby, and these green fingers can branch into other neighbourhoods or lead to larger naturalised areas such as wetlands and/or bio-retention ponds. In effect, the green spines can connect The Flats, within and without itself, to a wider area spatially and ecologically.



## System Diagrams

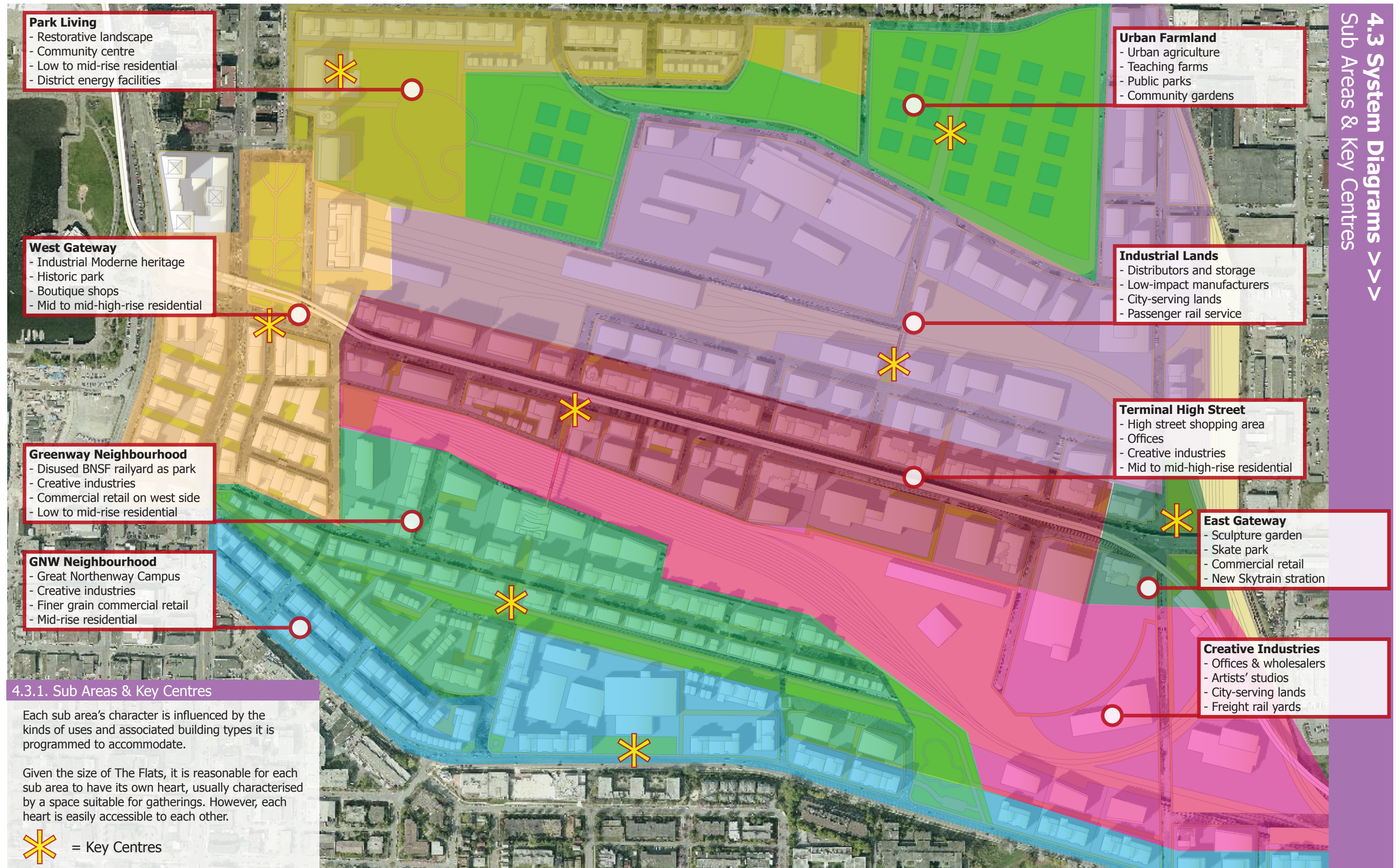
Pulling back at a wider scale, the following system diagrams represent how the four key design concepts of 'connect', 'accommodate', 'respect' and 'restore' can be applied at a neighbourhood level. The system diagrams explore:

- **Sub-Areas and Key Centres** describes how different areas of The Flats may be based on its locale's unique history and/or function as well as potential developments.
- **Land Use** describes the different types of uses in the future. These land uses are based on current uses as well as projections that can help The Flats develop more robustly.
- **Movements** describes the way pedestrians, bicycles and proposed tram lines can move within The Flats as well as to the wider Vancouver region.
- **Public Amenities** describes the parks, civic centres such as a proposed community centre and other city-serving institutions that may be developed.
- **Green Infrastructure** describes the ways The Flats can capture energy to rely less on fossil fuels and municipal power. It also mentions the greenways and bioswales that can improve its ecological wellness.





## 4.3 System Diagrams >>> Sub Areas & Key Centres





**Residential**

- Multifamily residential
- Neighbourhood scale shops
- Public park spaces

**Institutional**

- Community Centre
- Childcare
- Neighbourhood scale shops
- Non-market housing

**Commercial**

- Commercial retail and offices
- Eateries and supermarkets
- Multifamily residential
- Public park space

**Mixed Use**

- Commercial retail and offices
- Creative Industries
- Multifamily residential
- Artists' studios

**Institutional**

- Tertiary education provider
- Student/artists' housing
- Live-work spaces
- Neighbourhood scale shops

**Green Space**

- Urban farms
- Public park space
- Site for outdoor activities or events

**Industrial**

- Distributors and storage
- Low-impact manufacturers
- City-serving services
- Automobile repairs

**Rail**

- Freight rail
- Passenger rail
- Coach-bus depot

**Green Space**

- Public park space
- Sculpture garden
- Skate parks and basketball courts

**Industrial**

- Offices & wholesalers
- Big box stores
- Artists' studios
- City-serving lands

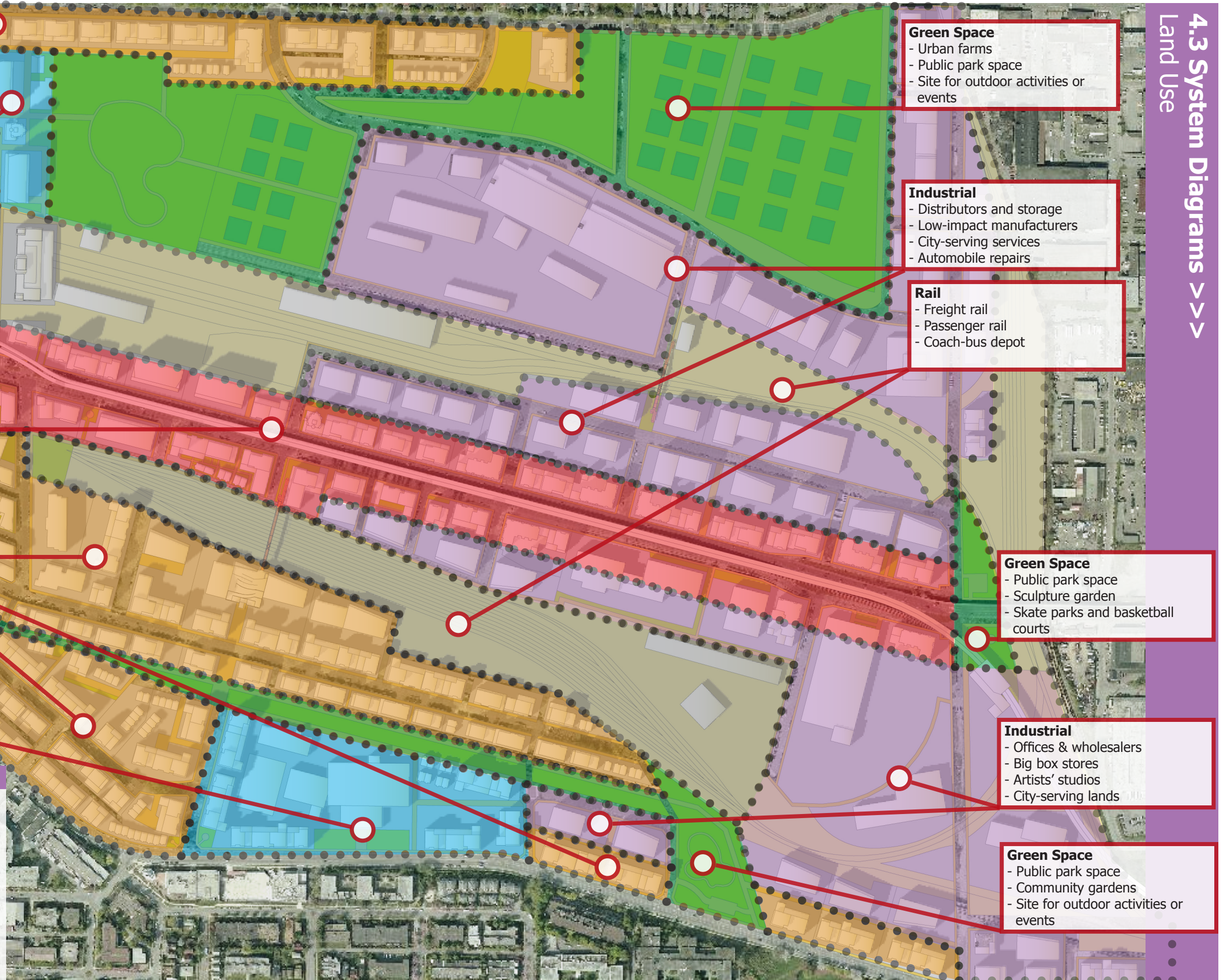
**Green Space**

- Public park space
- Community gardens
- Site for outdoor activities or events

#### 4.3.2. Land Use

While The Flats can accommodate non-industrial uses, industrial lands should be retained not only for the purpose of providing businesses with affordable lands, but to provide jobs for the growing population in both adjacent neighbourhoods and The Flats' future residential developments.

The overall strategy is to gradate the land use by allowing more residential developments to take place on the west and south sides, while the east and north sides stay more industrial.





## 4.3 System Diagrams >>> Movement



### 4.3.3. Movement

To increase connectivity, some of the larger, longer lots are subdivided, or have right-of-ways cut across to create a more flexible walking grid. Pedestrian and bicycle bridges are built to allow movement across the city-serving railyards. A new skytrain station is added at Glen and Terminal to serve future residents and workers. A tram-line will also run along Great Northern Way.



**Trillium Community Centre**  
- Community centre for future Flats, Strathcona, Yaletown and Chinatown residents  
- Childcare and library services

**Trillium Park**  
- Park can act as a 'backyard' for the new residences to the north of the park  
- Restorative landscape

**Mid Terminal Ave Park**  
- Park that offers pedestrians and cyclists a chance to slow down on the future busy Terminal Ave

**Station St Bioretention Park**  
- Provides new residents and workers with green space amidst dense residential developments

**Great Northern Way Campus**  
- Tertiary education in the creative arts  
- Proposed after-school arts program for high-schoolers.

**Chinese Freemason Housing**  
- Expansion on existing seniors housing.  
- Serves Vancouver's ageing population

**Strathcona Urban Farms**  
- Combines food production and naturalised landscape  
- Provides produce for grocery distributors and wholesalers

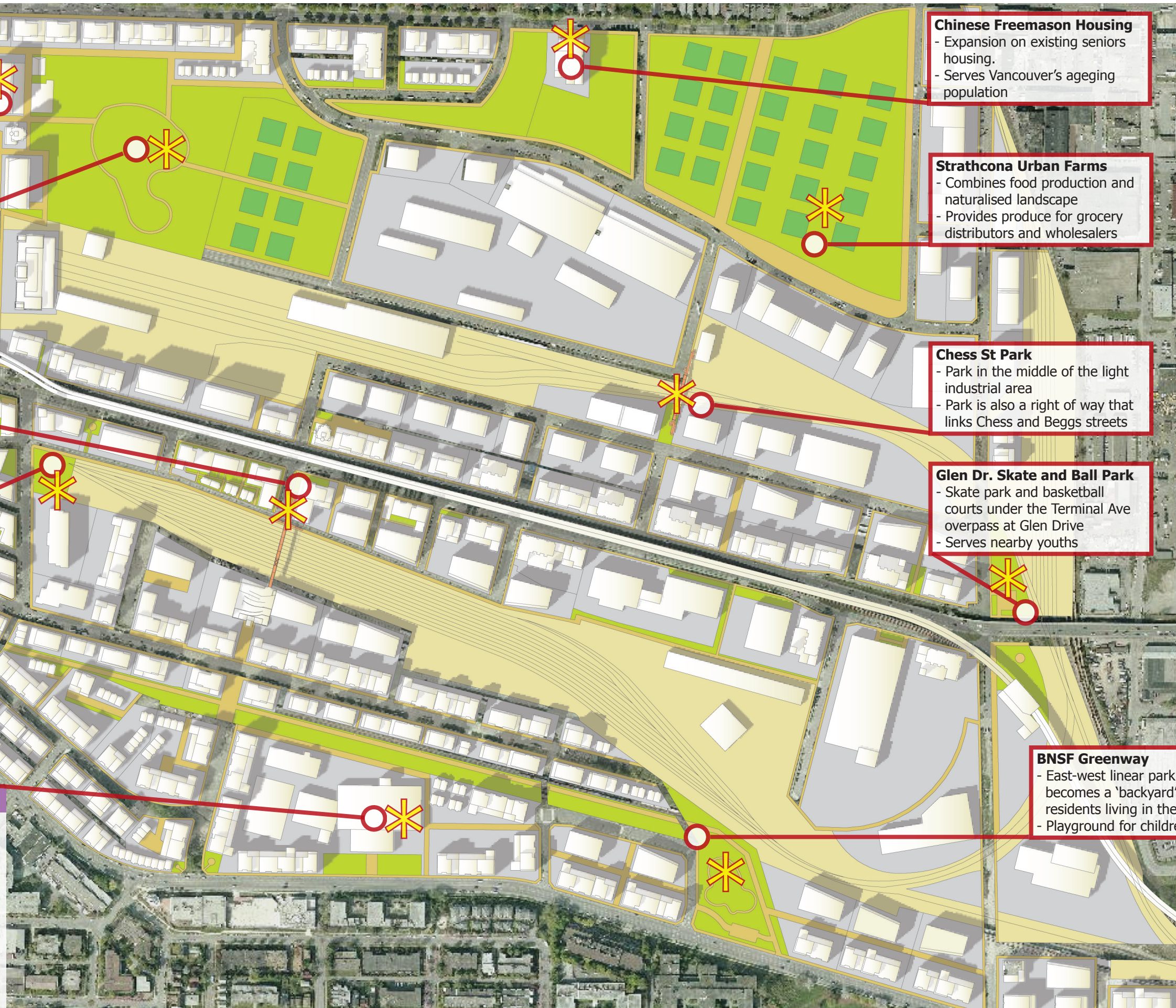
**Chess St Park**  
- Park in the middle of the light industrial area  
- Park is also a right of way that links Chess and Beggs streets

**Glen Dr. Skate and Ball Park**  
- Skate park and basketball courts under the Terminal Ave overpass at Glen Drive  
- Serves nearby youths

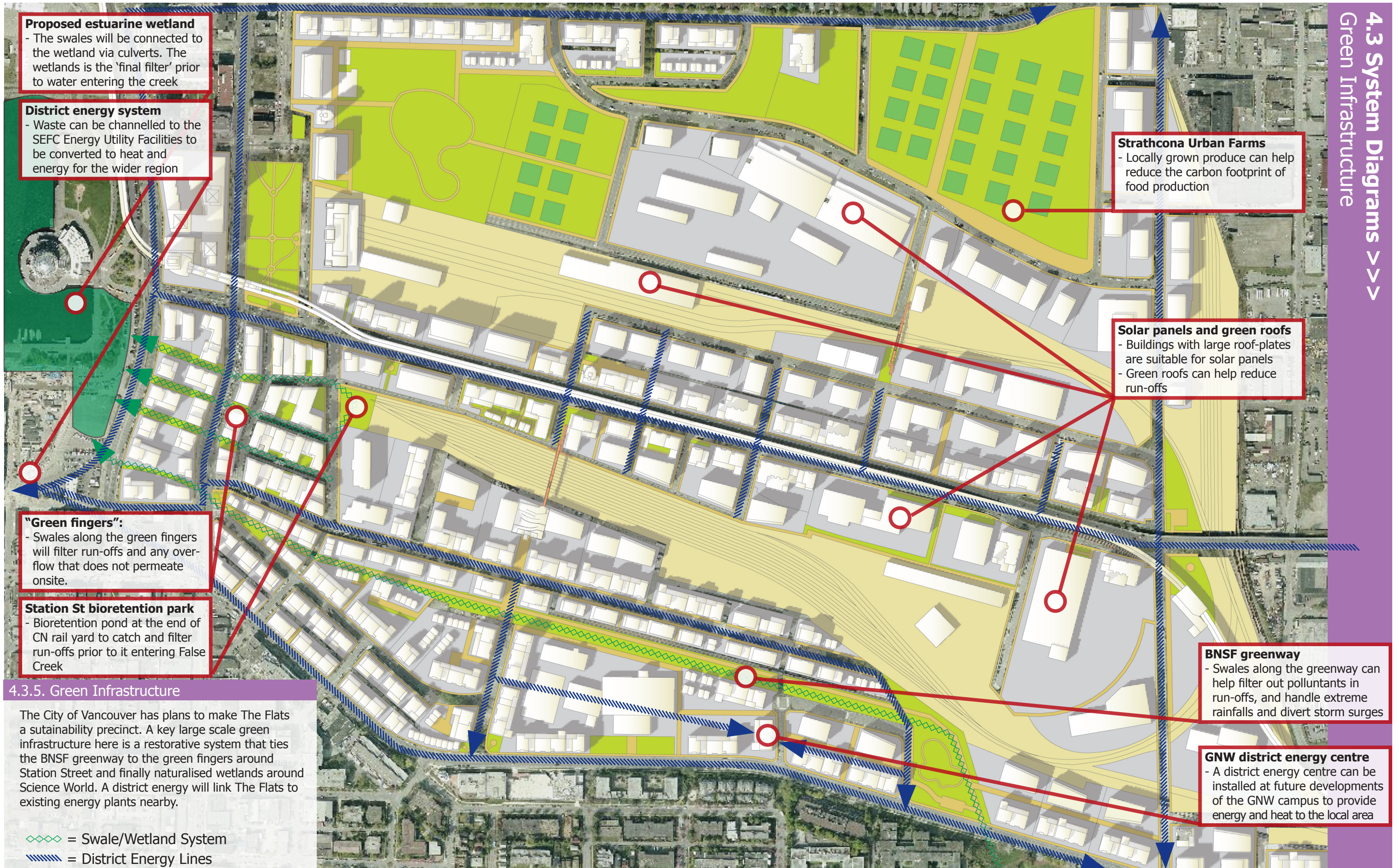
**BNSF Greenway**  
- East-west linear park that becomes a 'backyard' for residents living in the area  
- Playground for children

#### 4.3.4. Public Amenities

Currently, The Flats does not have much public amenities due to its low population. However, with more residences and employment opportunities, amenities become necessary to accommodate the needs and well-being of its residents. Besides the new shops on major arterials, other prominent amenities are naturalised spaces such as the BNSF greenway to restore the area's natural ecology. A proposed Trillium Community Centre, an after-school arts program at GNW campus, and the Glen Drive Skate and Ball Park are other amenities.















**Map Information**  
 - Scale: 1:5000  
 - Shadows: Sept 22, 2pm



#### Focused Study Areas

2 focused study areas will be presented here to give readers a more in-depth look at what can happen at The Flats when connections, accommodations, respect and ecological restoration are pursued. The 2 areas are:

1. Station Street Mixed Use Quarters
2. 'Double-Fronted Block' at 500 Terminal Avenue



4.5.1. Station Street Mixed Use Quarters

This area is currently a collection of disused and under-used warehouses. In line with the principles of accommodating more uses, respecting The Flats’ history and restoring ecological functions, this area will be developed with the following features:

- Continue to house some light industrial uses such as R&D firms, software design, architecture, planning and design businesses, artisan studios, boutique clothing and/or furniture manufacturers, etc. Given the area’s proximity to Main Street, some of the first floors will be for commercial retail uses such as eateries, small to mid-scale shops and essential services such as clinics, post-offices and banks. Some of the second floors can be used for offices. Most floors from the second floor and up will be for residential uses.
- Improve ecological well-being with bioswales running along the buildings’ sides. They can capture and filter run-offs and stormwater. In addition, they can also catch excess grey water that is not already treated. The swales are connected through culverts westward to the proposed wetlands at False Creek, and eastward to the proposed retention pond at the western edge of the CN railyard. The swales can become a main feature in the streetscape design.
- Retain sense of heritage through facade retention for heritage listed buildings, repurpose warehouses built in the industrial moderne style, and use complementary materials and articulations for any new buildings in the vicinity.

Development Data for Focus Area

Average Typical Lot (+/-170’ X 160’ lot): 23000 to 27000sf

Existing Conditions on typical lot

Average Building(s)’ Floorspace: 37000sf  
Average Net FSR: 1.17 to 1.37  
Average Heights: 2 storeys  
Land Use: Warehouses, storages and wholesalers  
Green Space: 0sf

Proposed Conditions on typical lot

Average Building Floorspace: 92000sf  
Average Net FSR: 3.41 to 4.0  
Average Heights: 6 storeys (stepback at 4th storey)  
Land Use: Light industrial, commercial retail, cafes, offices and services (on first and/or second floor), and residential (from second/third floor up)  
Green Space: 10000sf (Including roof-top gardens, but excluding the bioswales)



Bioswales

- Swales along roads and buildings can help mitigate run-offs and reduce the risk of flooding and ponding.

Traffic-calmed streets

- As the streets will still be used for the businesses, vehicular access is still important. However, the streets are narrower to calm traffic.

Complementary materials

- The materials and architectural style of added floors and adjacent buildings should complement a heritage character.



Station Street Mixed Use Quarters



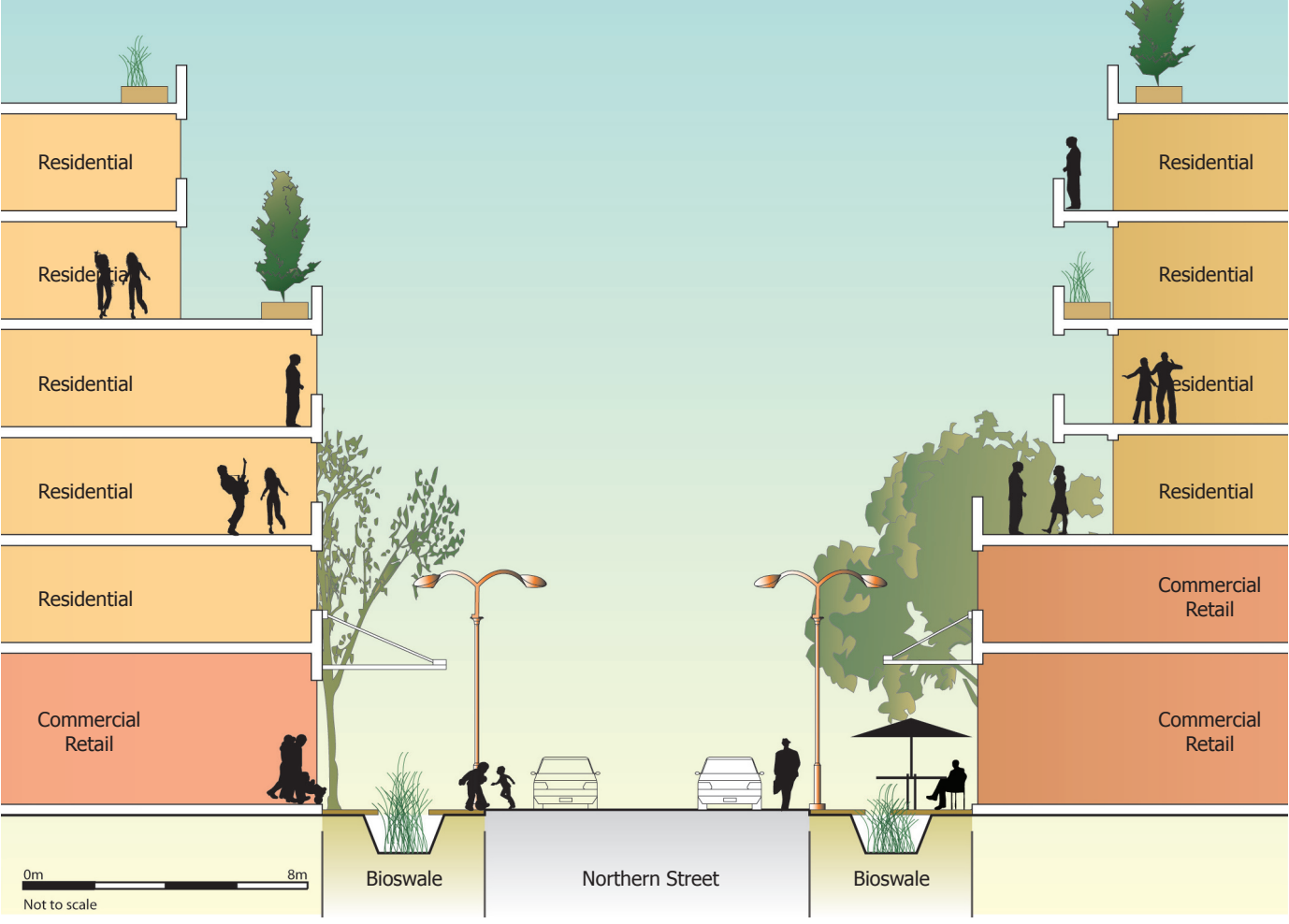
Streetview (Looking west on Northern Street)



Existing Conditions around Focus Area



Street-Section (Looking west on Northern Street)





4.5.2. Double-Fronted Blocks at Terminal Ave

Most of the blocks along Terminal Avenue are currently zoned for light industrial uses. In order to accommodate a wider range of uses at The Flats while respecting its industrial function, lots along Terminal Avenue can develop with the following features:

- Maximise the lots’ potentials by ‘double-fronting’ them, especially for the deeper lots on the south side of Terminal Ave. This involves splitting the lots into a front-half and a back-half. The front half faces onto Terminal Avenue and the back half faces onto the laneway. This is doable especially for lots more than 250’ deep. The front half will accommodate finer grain commercial-retail buildings, with some residential uses from the second or third floor up, especially for lots closer to Main Street. The back half will be industrial oriented buildings with larger floorplates suited for light industrial uses as well as R&D type offices. Entrance to the industrial part can be accessed via the lane.
- Provide privacy, especially to the residents living in there, by having a courtyard with a 40’ to 50’ depth that separates the front and back buildings. Trees can be planted here to screen out noise that may emit from the industrial oriented buildings.
- Encourage this ‘double-front’ configurations by subdividing these 250’+ lots into the two halves and rezoning the front half to CD-1, while keeping the rear half I-2 (as it is now) or a modified I-2/I-3 that allows for closer proximity to non-industrial uses.

Development Data for Focus Area

Average Typical Lot (+/-250’ X 420’ lot): 80000 to 120000sf

Existing Conditions on typical lot  
Average Building(s)’ Floorspace: 127500sf  
Average Net FSR: 1.06 to 1.29  
Average Heights: 2 to 3 storeys  
Land Use: Warehouses, storages, wholesalers, offices, auto-dealerships, fast-food restaurants, big-box stores.  
Green Space: 0sf

Proposed Conditions on typical lot  
Average Building(s)’ Floorspace: 255000sf (~ 110000 sf for industrial, 60000sf for commercial-retail, and 85000sf for residential. Ratio will weigh more industrial towards the east end of Terminal)  
Average Net FSR: 2.13 to 3.19  
Average Heights: 6 to 8 storeys (stepback at 4th storey)  
Land Use: Front-half: Commercial retail, cafes, offices and services (on first and/or second floor), and residential (from second/third floor up); Rear-half: big-box stores, warehouses, storages, R&D offices and wholesalers, green businesses.  
Green Space: 10000sf (Mainly in the courtyards and R.O.Ws)



**Terminal Ave-fronted buildings**  
- Buildings that faces on to Terminal can host commercial-retail units as well as residential units from the second floor up.

**Courtyards**  
- To give residents living on the premise some degree of privacy, courtyards can be used to screen out noise and direct sight-lines.

**Light Industrial Buildings**  
- Larger floorplate buildings are sited at the rear side of the lot. Loading can be from the lane or onsite. Offices can be above.



