Highland Park Redevelopment Plan

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EVDP 644

1. Executive Summary

Highland Park is located in Calgary's north along the original Calgary-Edmonton Trail. It has some wonderful views of the Nose Creek valley and is a short walk away from Confederation and Nose Hill parks. This community has many location assets which could appeal to all demographics including those looking for an inner city lifestyle, whether young professionals or young families moving to the area or mature families and seniors wanting to stay. It is well positioned for those wanting a quick commute to downtown or the north east industrial areas and it offers those looking for an active lifestyle a nearby extensive trail systems. In addition families will be drawn to the two community schools.

Highland Park was largely developed in the 1950's, but is now entering a period of transition. The original housing stock is typically a small bungalow on a large lot. Many of these bungalows are being purchased and replaced with infills. This is raising concerns amongst long-time residents who feel the neighbourhood character is being eroded. At the same time a beautiful community asset the Highland Golf Course, has been identified for redevelopment. Plans for this site will also need to be sensitive to the existing residents.

Calgary's population is growing at a steady rate but at the same time there is a municipal desire to control expansion of the city footprint. Calgary also has a mandate to become more fiscally sustainable; this means in order to control operational costs the city has to become denser. Inner city neighbourhoods like Highland Park have opportunities to rejuvenate and meet these densification goals however this needs to be achieved in a thoughtful way.

Our community plan hopes to meet many of these goals while providing some of the missing services and amenities that residents identified as being important. Key to the plan is the redevelopment along the Centre Street activity corridor. This road is central to the community and has many assets which will help this project succeed. To begin with a high technology bus rapid transit service will run along the Centre Street corridor, this service will convert to tram once population densities reach an acceptable carrying capacity. Centre Street will also be enhanced with the integration of a safe, well connected bike network that extends out into the community. The public realm along the street will be improved to make this space more pedestrian friendly. With these interventions it is hoped new developments will be attracted to this road which will see the replacement of housing that is currently in poor condition. It is also hoped that these projects will take full advantage of the current zoning designation resulting in higher density multi-family units. This new population will increase vibrancy along the activity corridor which will result in improved viability of transit service and any new retail planned in the commercial and mixed use zones. Much needed public spaces have been integrated into the design and with these private meeting spaces like restaurants and cafes will be encouraged.

The golf course redevelopment is the second cornerstone of our plan. It will provide new housing in many forms which will appeal to all potential residents old and new. The plan integrates many new badly needed open spaces and provides a trail system that will complete the connection between all the regional pathways in the north of Calgary.

The final recommendations are targeted for the industrial residential transition areas. These should be improved with special attention paid to the public realm along 41st Avenue and the park at its rear which once improved will provide much needed quality open space in the community.

We believe with all of these plans Highland Park's attractiveness can only be improved making it a special place within the larger Calgary context. These plans will also ensure that the neighbourhood continues to thrive for many years to come making it a desirable place for all.

Tracy, Anshu, Tim

2. Introduction

"Highland Park Redevelopment Plan" is the final graduation research oriented project of a group of Master of Planning students from University of Calgary. The project focuses on developing a strategy to handle existing local issues related to urban design, land use and social-economic development of this community. The strategy will align with planning policies and directions of MDP of City of Calgary. For completing this project Master of Planning students work closely with and get consulted from Highland Park community association, City of Calgary, some local developers and University Professors. Therefore, this project is both an academic research and also a recommendation document for the community future development.

The study area is the community of Highland Park which is located in the northwest quadrant of Calgary. The proximity to Nose Hill, Nose Creek, Confederation Park, Greenview industrial park, Center Street and downtown are assets of this community, which make it a desirable place to live. The community has a cultural diversity in its population of 3,792 (based on Civic census 2012). On the other hand, the community has some emerging issues such as the declining average income and total population, the increasing rental properties and infill housing which are reducing the historical sense of this community.

The goal of this project is to research, identify and analyse the aforementioned issues and provide a comprehensive development plan for addressing them. For achieving the goal, the stakeholders are engaged by vision sessions and open houses throughout the project. The planning context of the community is evaluated and the expected product is an innovative and strategic framework in the form of conceptual plans, planning polices and guidelines with the collaboration of stakeholders.

3. Vision

Redevelop Highland Park by intensification where by maintaining the character of the existing community with an integrated variety of housing forms, which is diverse, accessible, safe and affordable to all income levels, for either ownership or rental. Such housing gives a look of complete community. The redevelopment should make community pedestrian oriented with an attractive public realm, preserve heritage by respecting people and land, and diversify land use with a balance inventory of residential and non-residential form. The resultant sustainable community will conjoin the community as a whole where by building community, economy, culture, natural environment, and social capital.

Figure 1 Vision for Highland Park Redevelopment

4. Historical Analysis Background

Highland Park, located in Calgary's N.W., was built along Edmonton Trail, a remnant of the old wagon trail linking Edmonton and Calgary. This dirt road, established in 1875 by the North West Mounted Police, was a commercial transportation route for the fur and whiskey trade which ran from Fort Benton in Montana to Fort Edmonton. In the 1890's the railway was built along the same route and it quickly became the new primary means of transportation. Edmonton Trail eventually was paved and become Highway 1 in the 1930's.[1]

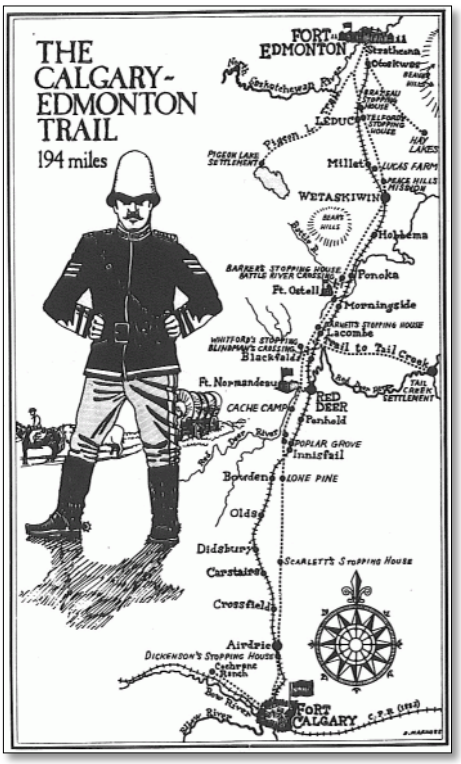


Figure 2 Calgary-Edmonton Trail [1]

Figure 3 3418 Centre A Street N.E., 1919
Source: Glenbow Archives

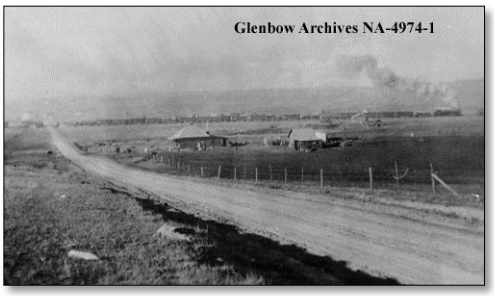


Figure 4 Edmonton Trail in 1922
Source: Glenbow Archives

The land where Highland Park lies was annexed in 1910. In 1911 it was broken up into tracts of land and sold to land companies during a real estate boom. The land was then further subdivided into 25 foot lots. Section 34 where Highland Park is located was divided into 4 districts: North Balmoral, Ree-Heights, Rose Lawn and Highland Park. The districts were given fancy names, Highland Park was a Scottish name, it was given to one of the districts to describe its high elevation and in the hope that the name would appeal to a British market.[2] At the same time The Canadian Estates Company Ltd. which developed Tuxedo Park the adjacent neighbourhood to Highland Parks south, donated a route extension and a city park in exchange for a guaranteed street car service to Tuxedo Park. A streetcar line was run up to the Tuxedo Park loop terminus from 1909-1936. [3]

Before Highland Park really started developing Queen's Park Cemetery was established in 1940. At 54 hectares it was and still is Calgary's largest cemetery. It has always been a favourite community destination for residents who today now use it to go walking, running or to enjoying nature.[4] Highland Park really started to developed after 1946 and was registered as a neighbourhood in 1954. At the same time the adjacent Highland industrial park grew. In the early years it was a major employer for community residents.[5] The industrial park included many mechanics and manufacturing shops, lumber yards and the well-loved Sunset Drive-In movie theater.

Figure 5 Sunset Drive-In Grand Opening Advert 1950[6]

Figure 6 1929 Calgary Districts Map Produced By The Calgary Drafting Company Ltd.
Source: Calgary Public Libraries Archive

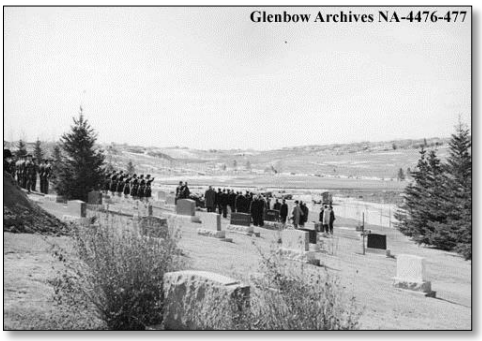


Figure 7 Queen's Park Cemetery, 1969
Source: Glenbow Archives

The first community school Buchanen Elementary school was opened in 1951 with an initial enrollment of 414 students. It was named after Dr. Frank G. Buchanen who was a Calgary Board superintendent who retired that same year. Not long after in 1962 James Fowler High school opened its doors. It was named after the well-respected educator Dr. James Fowler. [7]

From 1965-2011 the Highland Golf & Country club operated the community 9 hole golf course. It was a major neighbourhood amenity which also provided the community with its beautiful natural scenery. One of Nose Creek's tributary's was buried under the course and so on occasion this natural drainage course has led to the course flooding.[8]

In the 1960's 48 Avenue N on the northern boundary of the community was combined with the eastern portion of Edmonton Trail and named McKnight Boulevard after flying officer William L. McKnight a Royal Air Force pilot who flew in the Battle of Britain. He was best known for destroying 23 German planes in the battle and was later awarded the Distinguished Flying Cross.[9]

4.1 Historical Evolution

A study of the development evolution of Highland Park shows a growth pattern which largely occurred post World War II over a couple of decades.

1924 Map: Much of Highland Park is rural land in 1924. Houses and grid street pattern are beginning to develop in the southern community of Tuxedo.

1. Edmonton Trail opened 1875 crossing over Nose Creek

2. Railway line runs from Calgary to Edmonton, first pedestrians taking trip in 1891
3. Tuxedo Park, terminus for streetcar

1949 Map: By 1949 houses are starting to develop in Highland Park.
1. Queen's Park Cemetery opened in 1940
2. St. Gabriel's Anglican Church built 1940, later purchased in 1965 by Danish community and renamed Danish Lutheran, it is now designated a Calgary historic resource.
3. Construction of Berean Bible College, later known as Foothills Christian College, opened from 1948-1986

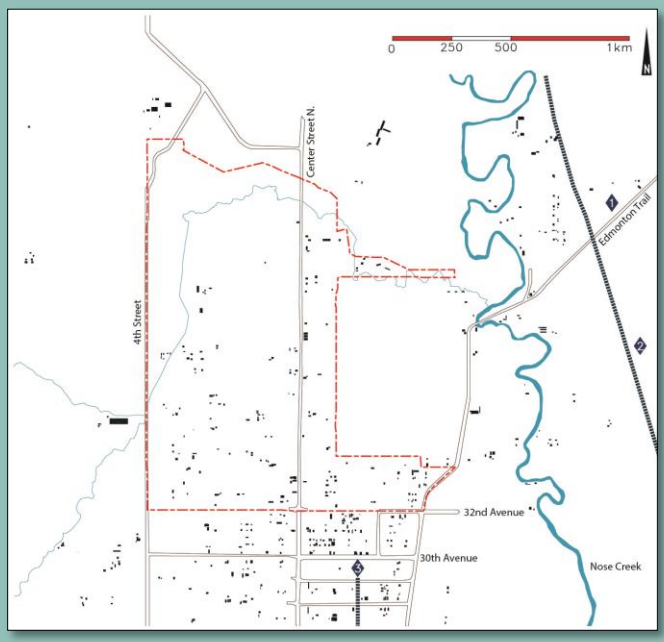
1956 Map: Highland Park is almost completely developed.

1969 Map: In 1969 the Nose Creek river was redirected. McKnight Blvd and the current day Edmonton Trail road were in operation. Highland Park and Highland Park industrial park are completely developed.
1. Two gas stations on Center St.
2. Sunset Drive-In opened 1950
3. Mel's Lumber Yard
4. Northminster United Church 1954
5. Queen's Park Full Gospel Church today known as Jubilee Church
6. Safeway store which was originally the Copenhagen Fair Furniture Store (date of transition unknown)
7. Buchanan Elementary School opens 1951
8. James Fowler High School opens 1962
9. Highland Community Center and park, opens mid. 1950's
10. Activity node with gas station, 3 stores & Highland Mennonite Bretheran Church
11. Highland Golf & Country Club opens 1965

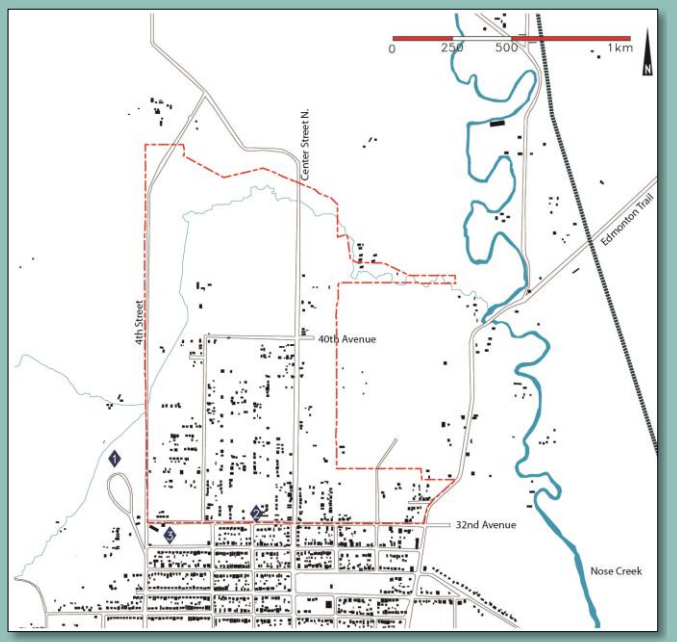
4.2 References

[1] Calgary and Edmonton Trail, Fourth Junction Project, http://www.forthjunction.com/c-and-e-trail.htm
[2] What's in a Name:Calgary? Vol. II, Donna Mae, Published by Humber Detselig Enterprises Ltd., Canada, 1994
[3] Calgary Transit: A Centennial History, Published by: The City of Calgary, Calgary, 2009, Prepared by: Harry Max Sanders
[4] The City of Calgary Website, http://www.calgary.ca/CSPS/Parks/Pages/Cemeteries/Queens-Park-history.aspx
[5] North Bow Design Brief, The City of Calgary Planning Department, 1977
[6] Drive-Ins.com, http://www.drive-ins.com/pictures/xxtsun9001/sunset-drive-in-calgary-ab
[7] Calgary Board of Education, http://www.cbe.ab.ca/schools/default.asp?id=B
[8] Colliers International, http://www.collierscanada.com/5826#
[9]Calgary: Spirit of the West: A History, Hugh A Dempsey, Published by: Glenbow & Fifth House Publisher, Saskatoon, 1994 pg 127

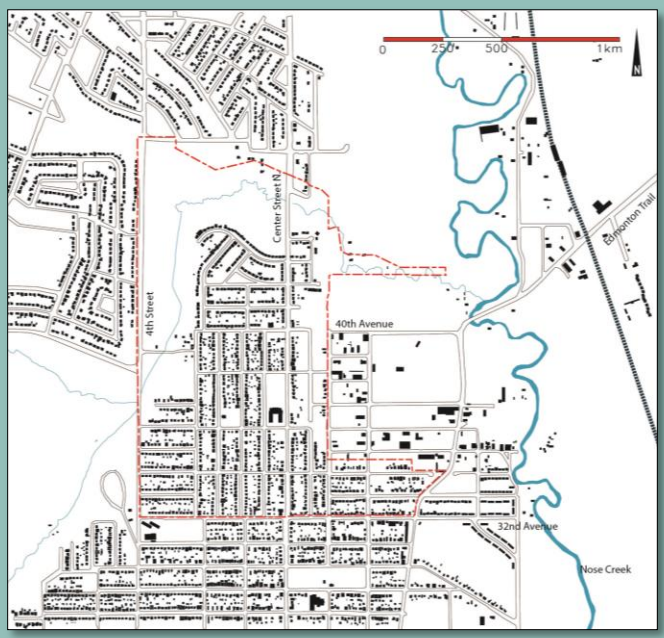
1924 map



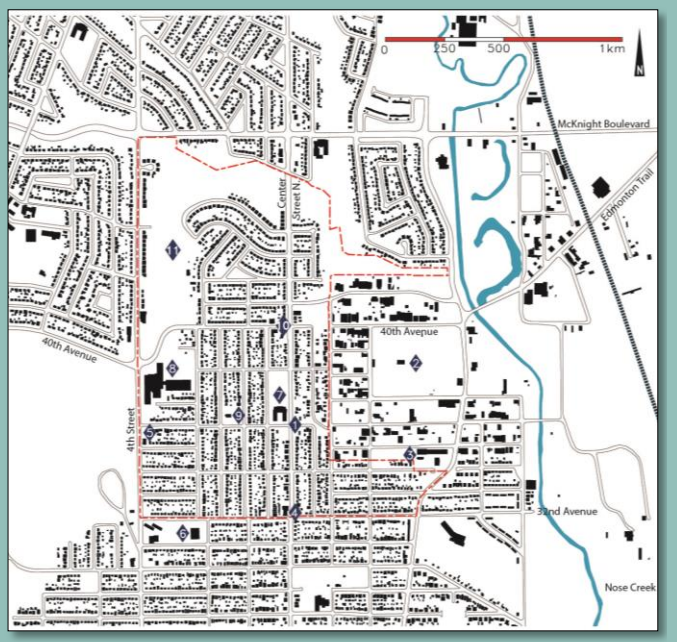
1949 map



1956 map



1969 map



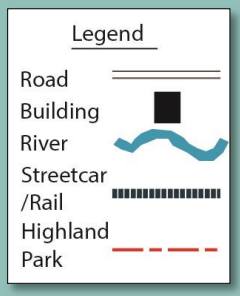


Figure 8 Highland Park Historical Evolution

5. Environmental Analysis Background

5.1 Introduction

An environmental analysis was done for the nine sections surrounding the redevelopment site, "Highland Park". The considered factors are physical factors: wind, sun and topography, and locational factors: natural spaces which includes Nose Hill Park and nose creek, and recreational parks which include Confederation Park, airport, industrial area, Queen's park Cemetery, unused contaminated gas stations, recycle depots etc.

5.2 Objective of the Analysis

The main objective of analysis was:

1. Determination of the natural slope of the land in terms of natural drainage network, built-up development, viewshed analysis, walkability, traffic sight line etc.
2. Preservation of wildlife habitat, the ecosystem and the species at risk
3. Effect of north westerly wind on existing built environment
4. Analysis of the noise and air pollution due to adjacent land use

5.3 Environmental Factors

These factors affect the local climate which determines the type of environment a place is going to have. This section provides a brief description of these factors which are categorized as physical and locational factors.

Physical Factors

Wind: The prominent wind direction is north westerly. The presence of Nose hill Park acts as a barrier and creates a micro climate in adjacent communities such as in Thorncliffe. The wind direction helps in taking away the air and noise pollutants, generated from the nearby industrial area, away from the existing communities. At the same time, it increases the noise pollution created by runway no. 28. Most of flights take-off from the runway no. 28 which is directed towards northwest. Adding soft landscape such as grass, trees etc. can be one of the solutions to reduce the noise effect. These prevailing winds are dangerous during winter and make the open spaces uncomfortable to enjoy [1].

Sun: Use of slope and aspects of natural terrain helps in utilising maximum exposure of sun. The existing buildings are of medium height (1-2 storeys) which reduces the impact of shadows on open spaces and streets.

Topography: The study area enjoys terrain from flat to very steep topography. It varies from 1227-1055m. This natural variation helps in maintaining the natural drainage system and also allows rain water to flow towards the water body, such as Nose Creek. The industrial area is at a low level with MSL of 1055m whereas Highland Park community is developed at MSL of 1071m. Highland Park enjoys the Sun and a nice view of golf course and the industrial area. The golf course is at valley with a steep slope of 10-15% where development is improbable. These steep slopes create certain blind spots. For example, at 40/41 Av NW intersection, the traffic visibility is almost zero. The undulated topography of the Highland Park makes the community less walkable and disconnects with rest of the communities. The steep slope at the turning of 36 Av NW disconnects the residents from 1Street NE. The steeps slopes are unfriendly to seniors and disable residents. The following map shows the slope and natural drainage.

Location Factors

Nose Creek: Due to channelling of Nose Creek for urban development natural wetland is lost and caters to bank erosion and down cutting. The dog off-leash areas and the storm water outlet no. 30 in Laycock Park are affecting the water quality and the wildlife habitat in and around the Nose Creek area [2].

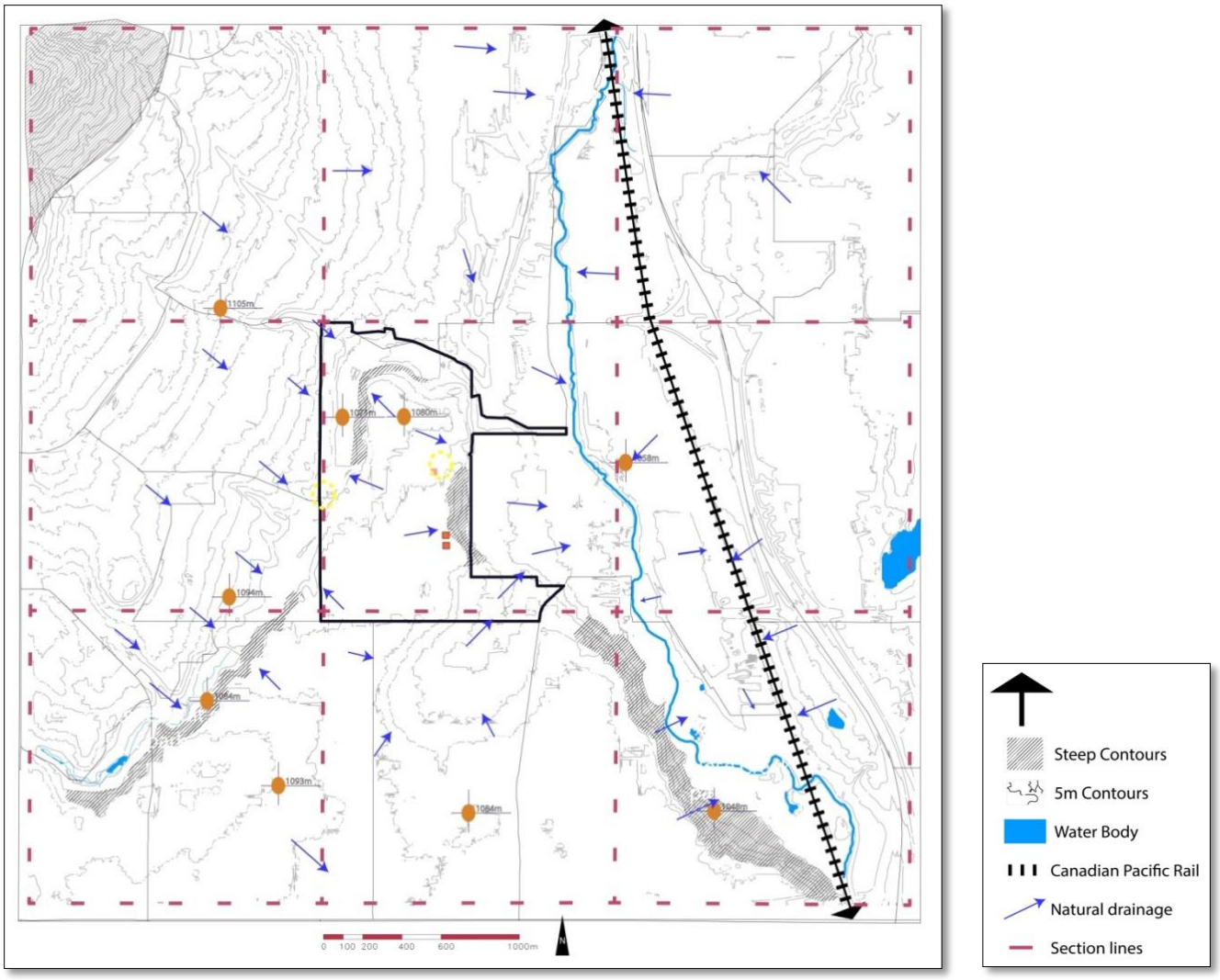


Figure 9 Slope and aspect of the nine sections surrounding Highland Park

Nose Hill Park: It is one of the best examples of grassland ecosystem left in Canada. The park is rich in biodiversity and is a well-known cultural landscape of Calgary. The wildlife and the vegetation are at risk due to additional development of recreational places. However, the paved areas and the dog off-leash areas are disturbing the wildlife [3].

Confederation Park and Laycock Park: The water quality of the artificial wetland of Confederation Park is deteriorating which affects the wildlife [4]. Confederation Park is also home to Lion's light festival where 98% of LED lights are from green energy. Laycock Park is under Calgary wetland conservation plan [5].

Queen's Park Cemetery: It is a land with an area of 55 ha. Use of green burial process is environmental friendly. The paths are covered with tree canopies and provide a pleasant visual to the space. It also helps in reducing noise and air pollution. Preservation of this piece of land is helpful for maintaining scenic landscaped beauty in future and to preserve the emotional attachments related to the Cemetery. The connectivity of communities through the cemetery helps in integrating communities together and removes the physical barrier across them. In addition, it is a good place to attract tourists [6].

Unused corner Gas stations at 36 Av Intersection: Two contaminated gas stations along 36 Av NE are undeveloped lands. Although the lands act as an open space which is environmentally good, they decrease the adjacent property values and safety due to their shabby look [7].

YYC Airport: The airport is located at north east corner of the study area. As per 2012 Annual Noise management report from YYC Calgary Airport Authority, the noise boundaries are defined by a complex forecasting noise model. All the communities in the study area are located outside the Noise Exposure Forecast (NEF) contours except the extreme north part of Greenview industrial area which lies in NEF 30. Residential development is prohibited within NEF 30 where by protecting the nearby residents from aircraft noise. As per the report, noise level is increasing slightly [8]. The map below shows the NEF contours and the location of runway 10, 28 in YYC airport.

Environmental Assets: Highland Park has one community recycled depot near confederation Park and one bottle depot at industrial area for solid waste management. Further, it is surrounded by green open spaces such as Confederation Park, Queen Park Cemetery, and Golf Course.

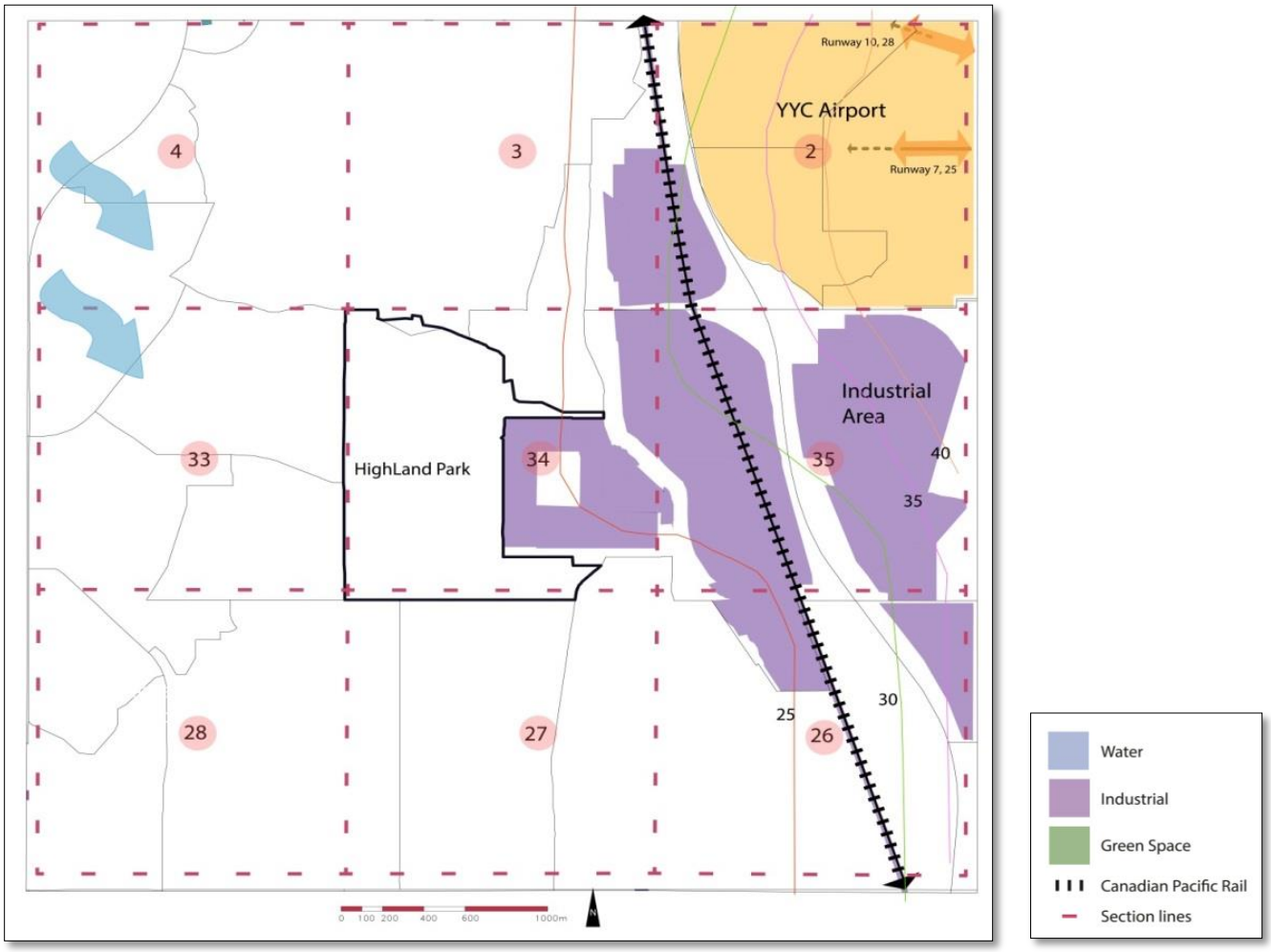


Figure 10 YYC Calgary Noise Forecast Contour

5.4 References

[1] Calgary Metropolitan Plan Environmental Report, 2009
[2] Nose Creek Watershed Management Plan, 2007
[3] Biophysical impact assessment, Nose Hill Park 2006
[4] Laycock Park Wetland restoration project, report of public-input open houses, May 2007
[5] Confederation park management Plan 2011
[6] Source: Alberta Funeral Services Regulatory Board
[7] Source: City of Calgary Brownfield Redevelopment Strategy, 2007
[8] Source: YYC Calgary Airport authority, 2012 Annual Noise Management report prepared by Environmental services Group

6. Land Use

6.1 Analysis Background

As we can see from the zoning map (Figure 8) of the community, most lots are currently zoned as residential R-C2 (Residential-Contextual One/Two Dwelling). The land uses of these lots are basically attached or detached single family houses. Recently, there is a trend that more and more developers are coming to buy those big lots with dated houses, they demolish the old houses and build new infills on the lots. However, local residents complain that those new infills usually damage the community profile because they always have wrong contextual building mass, height and setbacks. There are also many M-C1 (Multi-Residential-Contextual Low Profile) and M-C2 (Multi-Residential-Contextual Medium Profile) zonings along the Centre Street and 4th street, most of these properties are currently occupied by tenants. There was a big golf course in the north of the community, which is under the zoning S-R (Special Purpose-Recreation). Recently because of the bad business, the owner of the golf course has sold this land to a development who is proposing a residential development plan on the land. Except that there are several former gas station lots are currently empty and need remediation along the centre street, which also have potential to be developed.

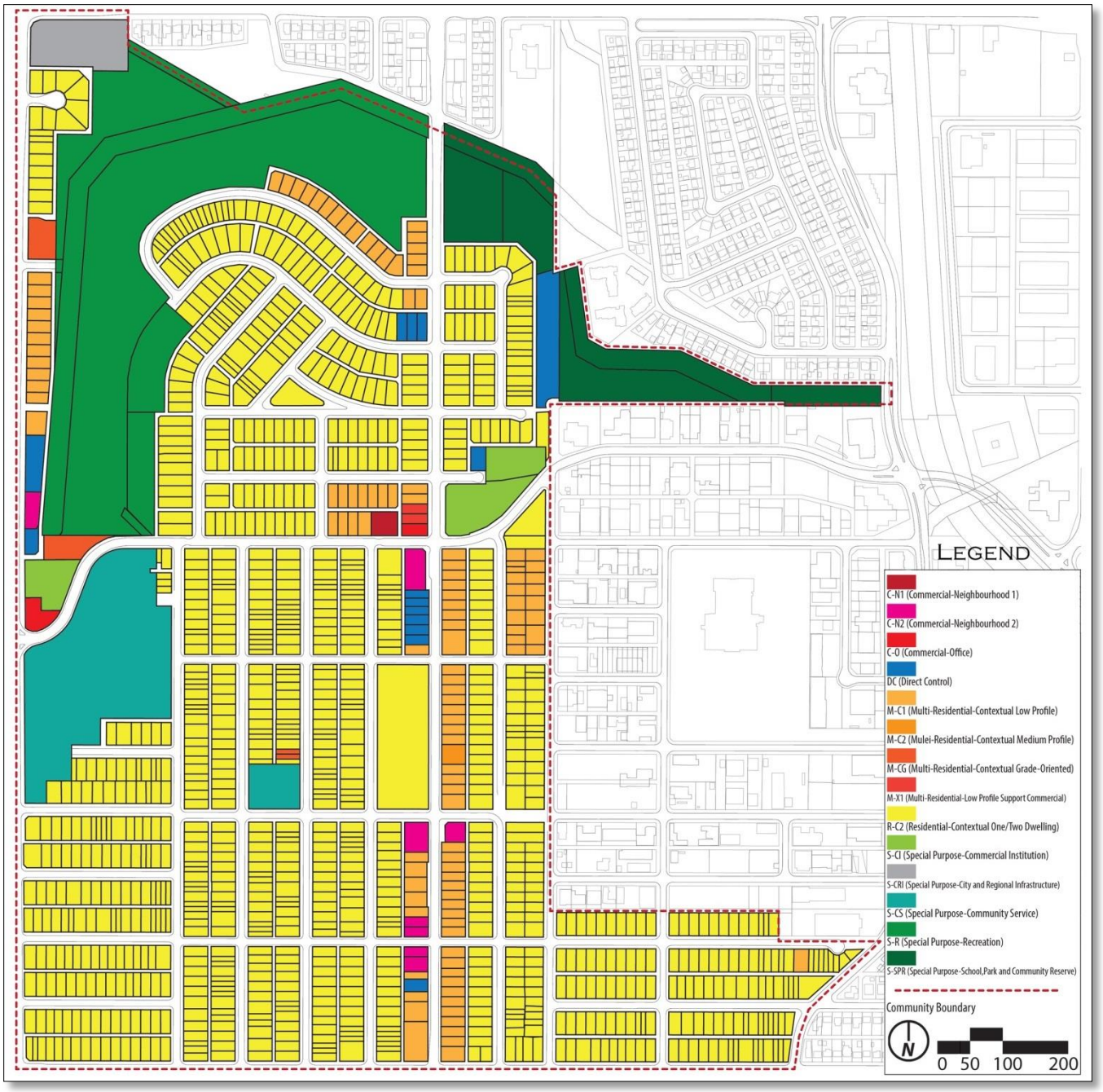


Figure 11 Zoning Map

6.2 Locations of Land Use Changes

From the land-use changes map (Figure 9) we can see, the yellow area which is currently zoned as S-R (Special Purpose-Recreation) is the site of the former golf course where we are proposing residential and some mixed-use land uses. On the other side of the Centre Street, opposite of the Golf Couse is a lot (red area) zoned as S-SPR (Special Purpose-School, Park and Community Reserve) currently, where we are proposing commercial uses. We are proposing mixed use in the centre of the community (Pink Area); medium-rise apartments in the purple area along the Centre Street.

Besides that, we are proposing land use changes in the industrial- residential transition area (green area) for improving it.

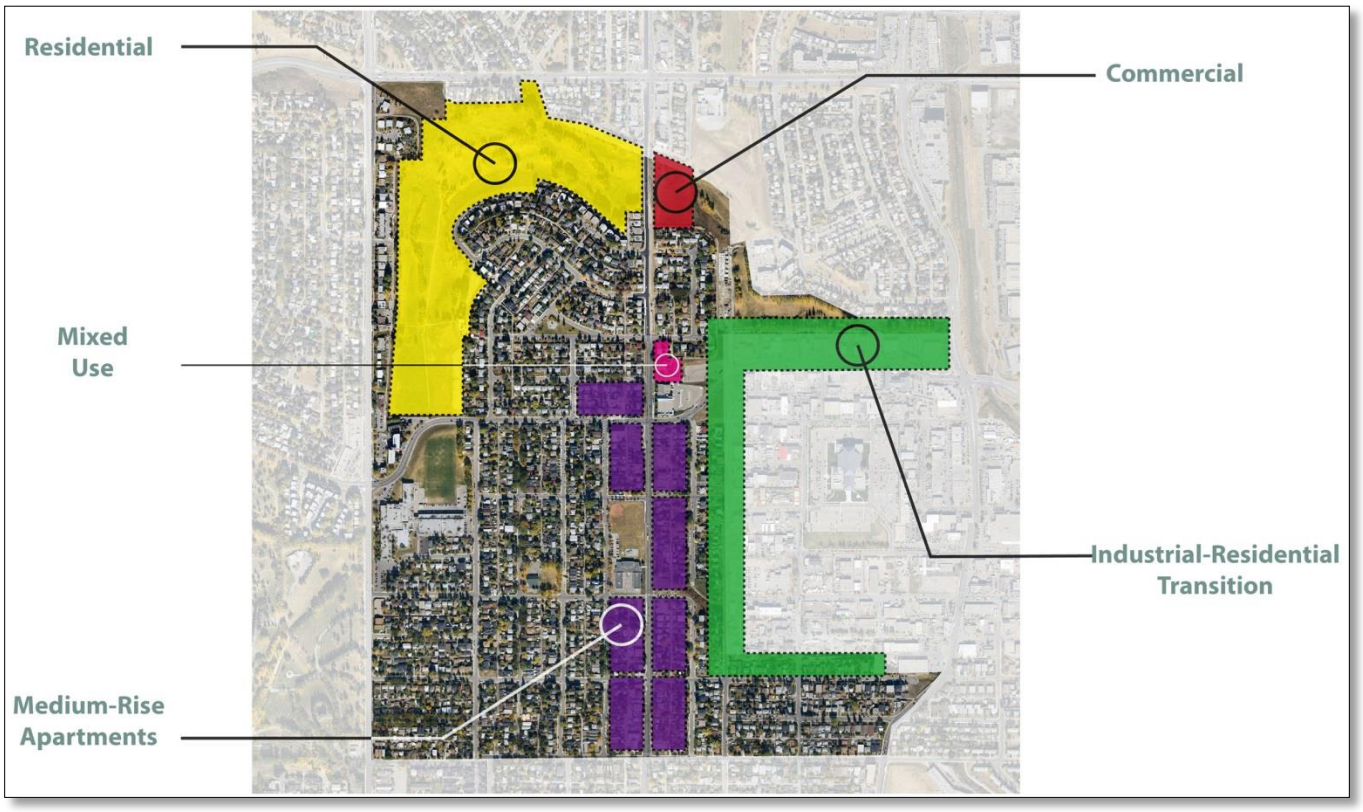


Figure 12 Land Use Changes

6.3 Residential Housing Types and Design Guidelines

Refer to the housing types map (Figure 10), in terms of residential housing types we are proposing cottage housing, medium-rise apartments and townhouses in the former golf course (yellow area); infill housing, secondary suite and laneway housing in the existing neighborhood (green area) and a combination of medium-rise apartments and mixed use buildings along the Centre Street corridor (purple area). This section is about the design guidelines about each of these housing types.

Figure 13 Housing Types

Cottage housing is a cluster of small scale detached houses with a common green space in the middle. They are more affordable than single houses and have more privacy than townhouses. There should be management companies maintain the landscape and shawl the snows, which make it perfect for senior people who want to live in small detached homes without stairs, snow removing and grass cutting.

Cottage housing Policies

6.3.1 Shed and flat roofs should be discouraged when used as the predominant roof form of any dwelling unit
6.3.2 Most Cottage houses (80%) should have at most one or no interior parking lots.
6.3.3 Most cottage houses (80%) should be detached and less than 1400 Sq. Ft. and have at most 2 floors above grade, with no fenced private gardens.
6.3.4 Each cottage housing subdivision should have its own condominium association and a management company which is responsible for maintaining the landscape, infrastructure and building exteriors, managing the wasters.
6.3.5 Units should provide adequate storage, proportionate to the size of the unit.

Medium-rise apartments could be affordable, high quality or senior condos. There are always condominium management companies taking care of the buildings, landscape and facilities. Usually these apartments provide amenities such as in-door swimming pool, gyms and more common green spaces. Some of them have monitors and building gates provide extra safety for the residents.

Medium-rise apartments Policies

6.3.6 40% of all housing units should contain one bedroom and should be no less than 525 Sq. Ft. in area. Bachelor units are not acceptable.
6.3.7 60% of all units should contain at least two bedrooms and should be no less than 650 Sq. Ft in area.

6.3.8 Bedrooms should be a minimum of 100 sq ft (9.3 sq m) with a minimum dimension of 9 ft and include operable windows to the exterior.
6.3.9 Building entrances/waiting/lobby areas should provide: Comfortable areas for tenants to sit, socialize and wait for vehicular pick-up; Comfortable seating and space to accommodate persons with mobility devices.
6.3.10 Amenity space and washrooms should be accessible to seniors and persons with varying disabilities. Provide automatic door openers in these rooms.
6.3.11 Laundry facilities should not be located below grade. They should be well-lit and comfortable including space to sit and socialize. Visibility to hallways and other common space is important for security.

Townhouses are usually more affordable than detached homes, and also got sufficient spaces for young families. These units usually do not have neighbors above or under and have individual access and garage, which provide more privacy than condo apartments. There are always management companies maintain the building and landscape.

Townhouses Policies

6.3.12 Townhouse development should be accessible from existing public streets. If new streets are required, they should be extended and integrated into the existing public street system.
6.3.13 Construct buildings to define the edges of, and face onto, public parks and accessible open spaces in order to enclose and provide overlook for these spaces.
6.3.14 Provide publicly accessible pedestrian walkway networks where appropriate as part of a townhouse development so pedestrians can comfortably access their neighbourhood services and amenities.
6.3.15 Organize buildings and site plans so that the impact of servicing functions on streets and accessible open spaces is minimal.
6.3.16 Townhouse developments should provide adequate sunlight and skyviews from streets and open spaces.
6.3.17 Townhouse developments should use the existing or 'natural' grade, or ground level, and blend into the context of the neighbourhood.
6.3.18 The front of new development should be attractive, well-proportioned and integrate with neighbouring buildings.

Infill housing is usually expensive, spacious, high quality and close to downtown. It is an option for high income professionals. However some infill houses in this community are unsuitable, not fitting in with the street. We suggest setting more bylaws to limit the designs, building mass and height and setbacks. Home builders should protect the existing vegetation or planting new trees.

Infill Housing Policies

6.3.19 New developments should not exceed the height of adjacent existing homes by more than 15 percent for the front 3.0 metres of the development.
6.3.20 When infill development on small lots is considered, to enhance the use of the rear yard as a private amenity space, garages should be located within the rear 9.0 metres of the yard to prevent tandem parking on long drive ways.
6.3.21 When design the new infill housing, its style should be consistent and compatible with the community and existing contextual buildings.
6.3.22 Building setbacks from the street should be consistent with the pattern of existing building setbacks on the block. Setbacks should be minimized in order to establish an urban development character and to bring buildings closer to the sidewalk and pedestrians.

Secondary suites have various types. It could be a suite above a rear detached garage, a basement suite or a garden suite. It provides affordable housing for lower-income residents and also provides extra income for home owners. It requires lower cost to build than laneway housing and is perfect for older children or elderly parents to live with their family.

Secondary Suites Policies

6.3.23 Minimize exterior changes to the front facade. Wherever possible, retain a single entrance on the front facade.
6.3.24 Screen and landscape parking space(s) to minimize the amount of light and noise that may spill over to adjacent properties.
6.3.25 Provide private outdoor space for the secondary suite which is separate from the principal unit.
6.3.26 If the entrance to the secondary suite is located on the side or rear of the house, provide a walkway to the secondary suite entrance.
6.3.27 Provide adequate storage space including bicycle storage for the secondary suite. Design the suite to be accessible to individuals with mobility challenges.

Laneway house is a small dwelling built at the back lane of a residential lot. It is perfect for older children or elderly parents to live with their family and still keep privacy. It is also a good rental property which provides extra income for senior home owners. It is a good way to accommodate more residents while maintain the community profile.

Laneway Housing Policies

6.3.28 Laneway housing should be designed to be a lasting, quality addition to the neighbourhood. Buildings which are not designed to last are not environmentally sustainable, nor can they be considered affordable when the costs of maintenance and replacement of materials over time is considered.
6.3.29 The laneway housing program aims to achieve livable and diverse dwelling unit types while recognizing that the size of the unit is related to the size of the lot.
6.3.30 On flat roof laneway houses, more design care is necessary to minimize the appearance of a two-storey building, and to avoid privacy issues with upper-level decks.
6.3.31 There are site circumstances, such as sloping topography or existing trees to be retained.

6.4 Industrial Residential Transition Design Guidelines

When the North Bow Design Brief was authored the mid-seventies many of the Highland Park residents were employed in the adjacent Highland industrial park. The land was zoned M-1, restricted light industrial, and M-2 general light industrial. Land usage was industrial mixed with some commercial. Activities ranged from machinists, auto body shops, wholesale suppliers to construction related industries. Resident complaints were regarding noise, dust, vibration, poor road conditions from industrial traffic, parking overflowing into residential areas and un-kept, unattractive properties adjacent to the residential neighbourhood. Today similar usage and problems exist with an additional odour problem most likely from body shop operations. The Sunset movie theatre has been replaced by an over-sized church and its vast parking lot. Highland Park surrounds the industrial area on 3 sides with 3 different interface conditions existing:

- Residential housing sharing a street with industrial activity along 1st Street N.E.
- Residential sharing a lane with industrial activity on the block between 34th and 35th Avenue N.E.

- The industrial area on the north side of 41st Avenue shares a lane with a City park

The current zoning I-E and I-R allows for industrial activity to range from medium to light industrial. It is recommended that along these interfaces any new industrial activity be restricted to light industrial. To create the best transition along these different types of interface the following recommendations and policies will be implemented.

Cross Street Interface Recommendation: Ensure there is transition buffer between the two different land uses with special attention paid to the space between public realm and industrial building front and ensuring the building massing interfaces appropriately.

Cross Street Policies

6.4.1 Industrial operations should be required to orient main entrances towards the street. Buildings need to avoid blank walls and instead should install many windows and entrances so as to create a permeable environment which activates the street.
6.4.2 Operations need to provide enhanced landscaping with trees to provide view buffering.
6.4.3 Building fronts require façade treatment with aesthetically pleasing materials and colours that integrate with residential neighbourhood.
6.4.4 Loading bay, storage and parking activities should be located at rear of parcel.

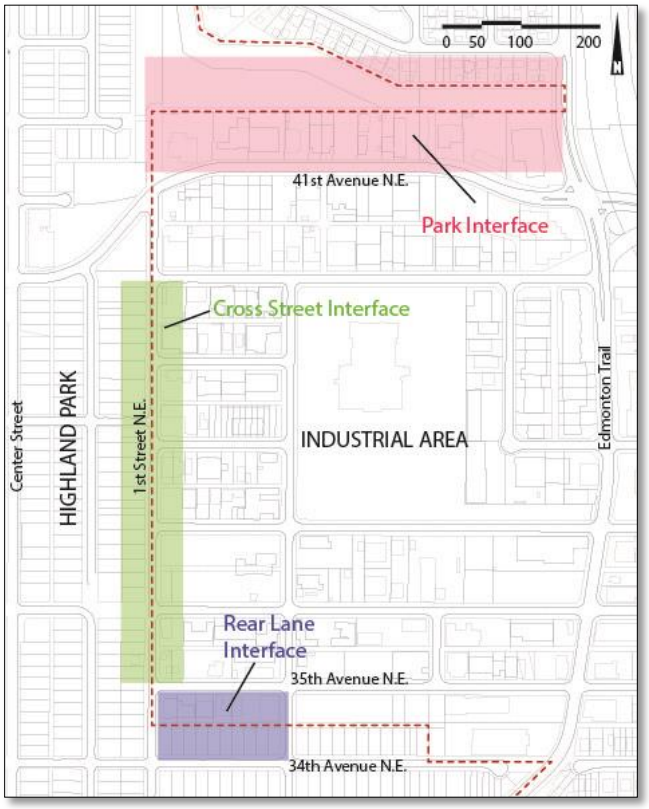


Figure 14 Industrial Residential Interface Locations

Rear Lane Interface Recommendation: Ensure the lane acts as a transition zone and the building massing transitions appropriately.

Rear Lane Interface Policies

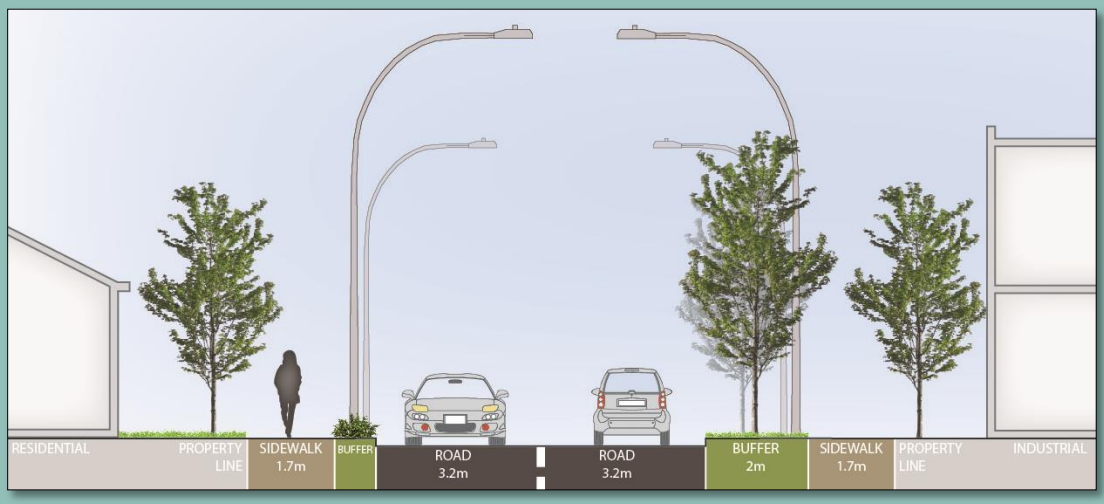
6.4.5 Lane width needs to be appropriate for industrial and residential traffic and provide building separation.
6.4.6 Operations need to provide enhanced landscaping with trees to provide view buffering.
6.4.7 Acoustic fencing should be installed to shield noisy activity.
6.4.8 Loading bays and industrial waste should be hidden from view by fencing.
6.4.9 New operations should locate buildings on rear lane with loading bay, storage and parking activities located at front of parcel so as to shield residences from view and noise.

Park Interface Recommendation: Both Highland Park and Thorncliffe & Greenview community associations work together to establish a landscaping program in collaboration with The City of Calgary and the industrial operators. The program will aim to improve both the public and private realm softening the transition between uses.

Park Interface Policies

6.4.10 Move parking to property rears which will help provide further separation between activity and the park.
6.4.11 Acoustic fencing should be installed to shield noisy activity.
6.4.12 Loading bays and industrial waste should be hidden from view by fencing.
6.4.13 Soft landscaping and trees need to be added to provide view buffering.

Cross Street Interface



Rear Lane Interface

Park Interface

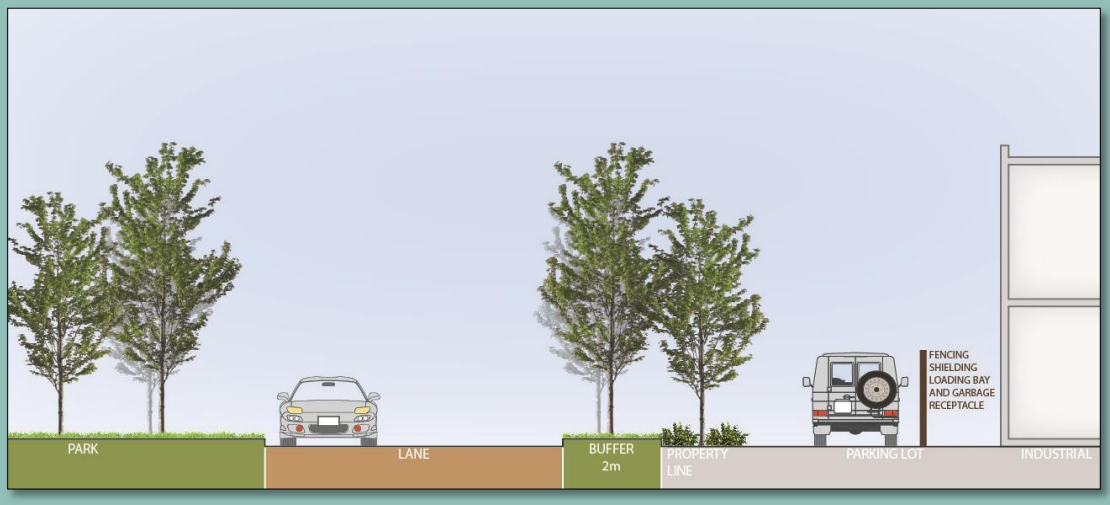


Figure 15 Industrial Residential Interfaces

6.5 Mixed Use Design Guidelines

Along Centre Street it is recommended some mixed projects be encouraged. These developments should implement the following policies.

Mixed Use Design Policies

6.5.1 At grade should be small scale retail, services and restaurants with no residential.
6.5.2 Above the first floor there should be residential so as to achieve target population densities.
6.5.3 The architecture should reflect a steady rhythm of doors and windows providing a uniform "street wall". The façade should be pedestrian orientated with front doors on street and highly visible lobby entrances. Façade design should be in keeping with the street using compatible materials and colours.
6.5.4 Buildings should promote green technology.
6.5.5 A small amount of visitor parking should be available at the building rear; resident parking will be underground parking garage.
6.5.6 Buildings need to provide secure, covered bike storage.
6.5.7 There should be minimal building shadows cast on public and private space for part of the day.

6.6 Commercial Design Guidelines

There is a major commercial centre with a plaza along the Centre Street. The Commercial Centre will be a pedestrian focused environment with emphasis on active modes of transportation and transit as the preferred mobility options. Streetscapes will be varied with strong design elements that add to a welcoming environment for pedestrians and cultural experiences.

Commercial Policies

6.6.1 A plaza will be provided within the commercial site as public spaces.
6.6.2 Four season design shall be built into all aspects of the commercial centre with appropriate building form and massing to support healthy and complete streets.
6.6.3 Buildings shall be further complimented with exterior design and create animation and transparency through use of high quality material.
6.6.4 Public art and street furniture will also be featured throughout the Commercial Centre to add interest and increase exploitability.
6.6.5 Parking requirements for the retail anchor shall be in the rear of the building with an active street front provided for active and transit mobility modes.

6.7 Center Street

Introduction

The existing land use along Centre Street at Highland Park is mostly single residential along with some commercial. Centre Street is one of the main urban corridors of Calgary as per Calgary Transportation Plan (CTP) and Transit-Oriented Development (TOD) guidelines. In addition, Centre Street might have the future LRT network. These developments warrant medium densification along the Centre Street.

Main Objectives for Centre Street Redevelopment

1. Achievement of medium densification by utilizing the existing zoning.
2. Cluster formation instead of individual lot development.
3. Enhancement of green space for social capital and secured environment for kids to play.
4. Setbacks after 10m height of building to reduce massing, shadow impact on adjacent buildings and open green spaces, and minimization of the density transition effect compared to neighbouring buildings.

5. Accessibility for pedestrian from all directions for legibility and permeability.
6. Usage of local streets for vehicular entrances to these new developments for traffic calming and to reduce direct entrance to the Centre Street.

MDP 2009, City of Calgary

2.2 Encouraging more compact urban form with efficient use of land, creating complete communities by maintaining the local community character and TOD, respecting the scale of existing streets, and diversity of land use

Recommendations

1. Proper Utilization of M-C1, C-N1 zoning by utilizing the maximum possible height of 12-14m.
2. Lot size of 15.7 x 30m can be developed into density of 8 units and combined lots of more than two lots can be developed in cluster formation which can create exciting building patterns in the community.
3. Back alley can be used for vehicular entry. The rear space and sometimes underground parking can be recommended.
4. The front setback from the main street can be used for green space for social gathering.
5. Horizontal and vertical Setbacks of the building from the front is required for reducing the scale and the shadow impact.
6. Affordable housing could be one of the choices of design.
7. Opportunities for Urban Agriculture, Community Gardens, and Pocket Parks between building and spaces.
8. Development of environmentally sustainable measures such as storm water management in two blocks.
9. Creation of Safer mid-block pathways under CPTED [2].

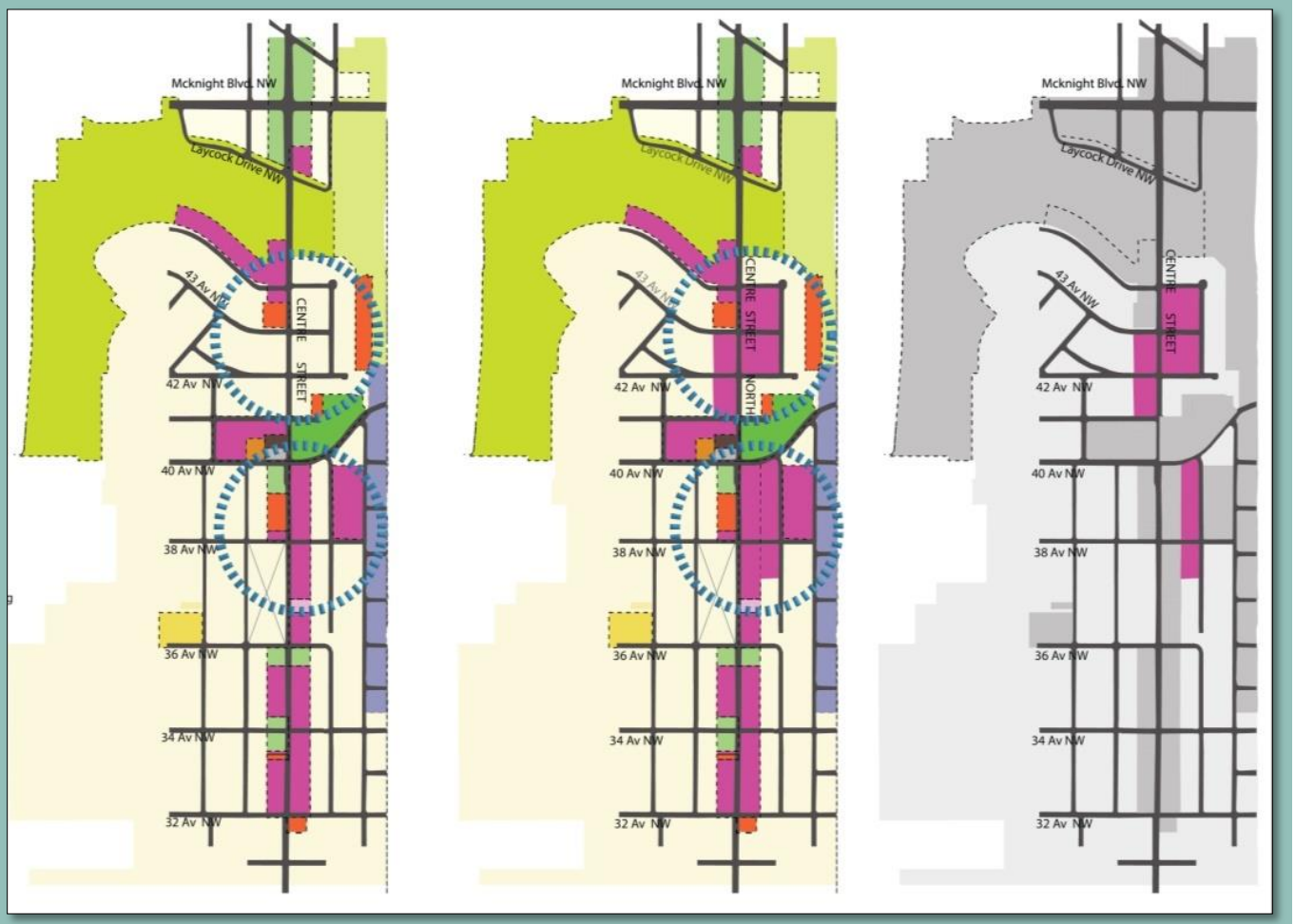
The following map shows the land use and zoning of the land adjacent to the Centre Street at Highland Park.

Existing Land Use | Proposed Land Use | Changed Land Use

Figure 16 Land Use Map of Development along Centre Street, Highland Park

The existing land use is mainly single residential. 89% of the residential is single family. The new development will propose 60% multi-family diversified homes creating densification. Below is the map showing the existing and the proposed zoning.

Existing Zoning | Proposed Zoning | Changed Zoning



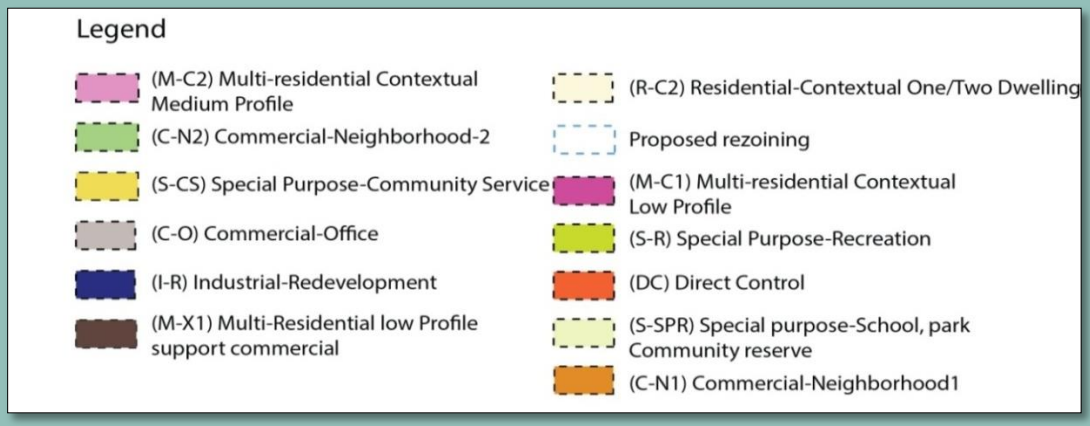


Figure 17 Zoning Map along Centre Street, Highland Park

Single storey residential buildings have been proposed to multi-storied buildings which give a sense of low to medium intensification along Centre Street within Highland Park. The figure below shows the existing and the proposed centre street elevation. The figure gives an idea of how the skyline is reduced with an increase in public realm. More trees are planted to give a look of urban boulevard. Special landscape is designed by planting Cherry blossom trees to enhance beauty and fragrance during summer. Existence of LRT and mixed use can make the street more vibrant and active. The development aims to achieve a street having urban forest and public realm.

The following figure shows the change in the skyline due to proper utilization of M-C1 zoning.

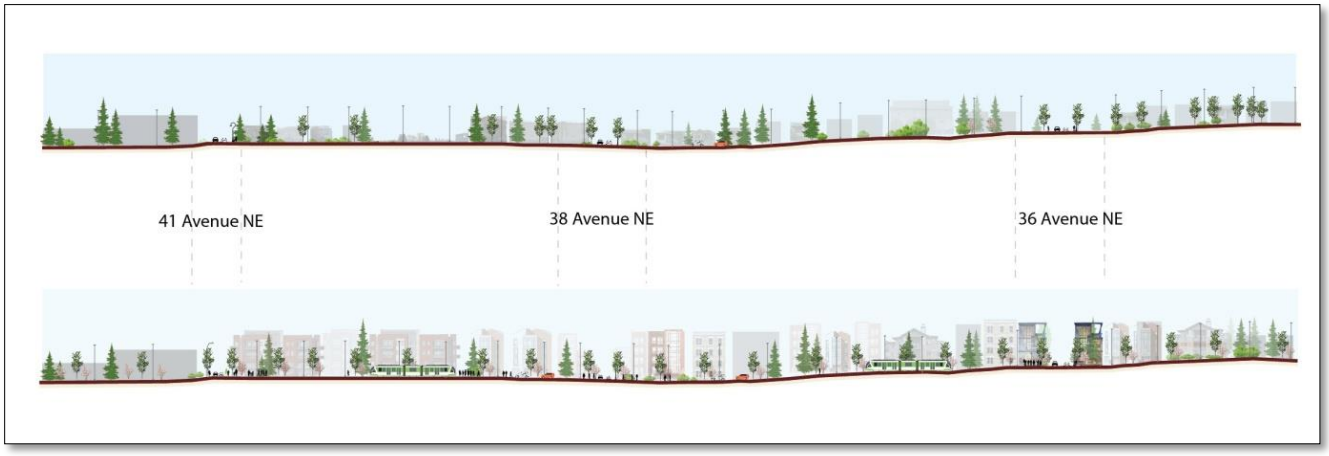


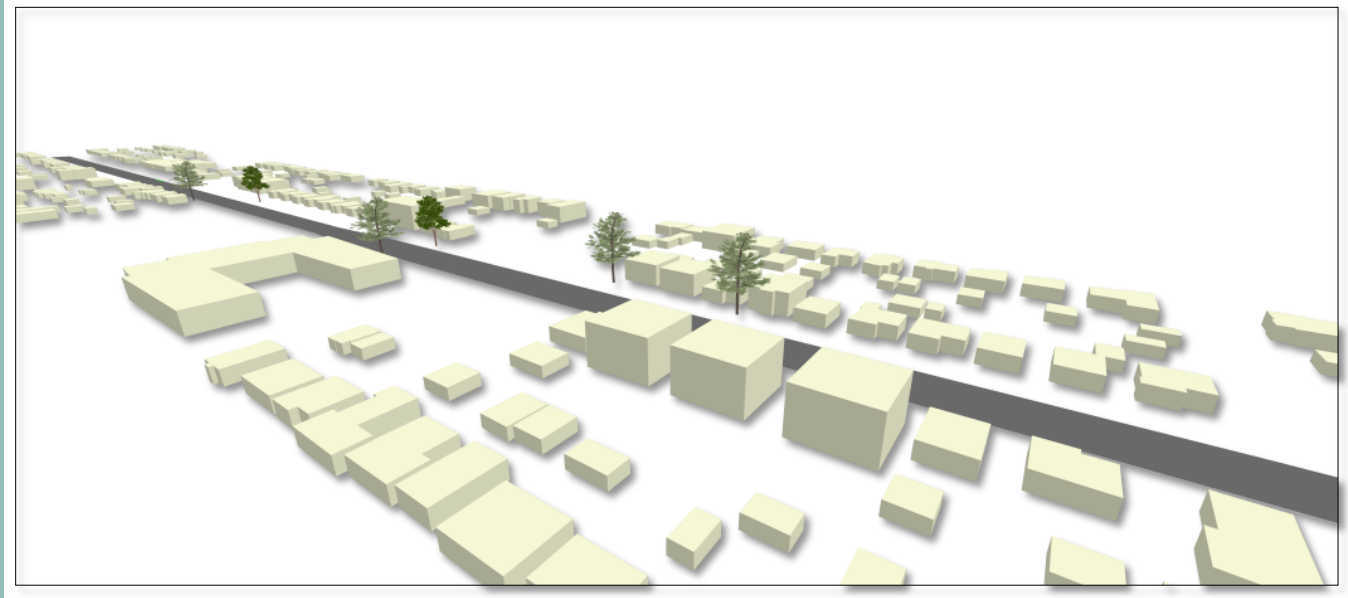
Figure 18 Existing and Proposed Elevation of Centre Street, Highland Park (For detailed drawing refer to Appendix A)

The figures shown on the next page give the comparison of building before and after the proposed redevelopment of 60% multi-storey building.

6.8 References

[1]Industrial Interface Recommendations, Appendix C, page 79 "Central Industrial Areas Land Review Part 1 - Market Overview and Demand Forecast" Planning, Development and Assessment Reports to SPC 2013
[2] Markham built-form height and massing study, built-form principles; Town of Markham (2010)

Massing of Existing development along Centre Street HPK



Massing of Proposed development along Centre Street HPK

Figure 19 Centre Street Massing

7. Open Space

7.1 Analysis Background

The study area has 9 DLS sections which are rich in open recreational spaces. Some of the natural open spaces are Nose Hill Park at North West, Confederation Park at South West and the golf course at extreme South East. The communities have several pocket parks, community garden and open spaces at school sites. Passing Trans Canada trail is a gift to the communities. These spaces include grassed open space, tot-lots, playing fields and artificially created wetlands.

Some of the characteristics of these open spaces are as follows:

1. Availability of high quality and diverse park and open space system
2. Safe and comfortable environment
3. Active and passive recreational activities for all ages and four seasons
4. Linkages of pathways and trails
5. Designated off-leash areas

These open spaces provide the following benefits:

1. Maintenance of Healthy Environment, conservation of the natural environment, storm water management, and preservation of wildlife habitat and biodiversity
2. Availability of Healthy communities for recreational activities in all seasons.
3. Enhancement of social capital and local food due to community gardens
4. Usage of school sites as multi-functional purpose throughout the day

Although the open spaces are sufficient to serve the nearby communities, some of the pocket neighbourhood parks are not well maintained. These recreational spaces are not well distributed and have poor connectivity. Some of the school sites are under zone R-C2. The following map shows natural and created open green spaces in the study area.

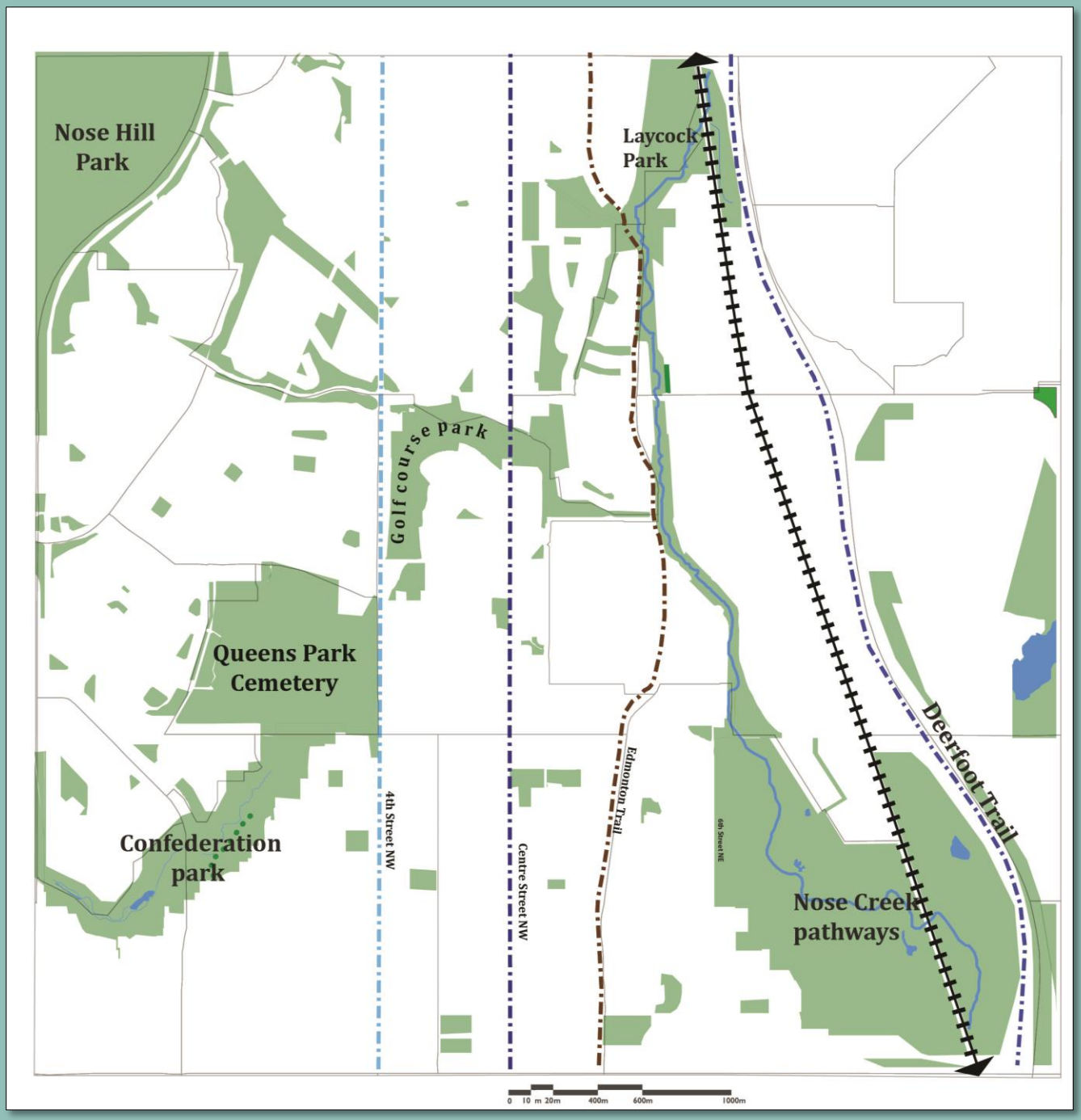


Figure 20 Location of open green spaces across 9 sections surrounding Highland Park

Recreational Open Spaces				
School Sites	Recreational Activities			
	Base ball	Soccer	Basket ball	Play ground
Corpus Christi	√	√	√	
Thorncliffe	√	√		√
Colonel Sanders	√	√	√	√
North Haven	√			√
FFCA NW Elementary campus	√	√	√	√
Highwood Elementary	√	√		√
North middle School Campus	√	√	√	√
Colonel Irvine Junior High	√	√		√
Buchanan	√	√	√	√
Cambrian heights	√	√		√
James Fowler High		√	√	
George P. Venier		√		
Rosemont	√	√	√	√
Tuxedo Park	√	v	√	
St. Joseph	√	√	√	√
Ecole De la Rose Sauvage		√	√	√
King George	√	√		√
Balmoral	√	√	√	√

This Table list the School sites along 9 sections and the available recreational facilities within them.

Community Name	Community Garden	Community Association Centre (CAC)	
Highland Park	√	√	Ice rink, Playground
Cambrian heights	√	√	Playground
North Haven		√	Baseball, Playground
Highwood		√	
Rosemont		√	Ice skating Rink
Mount pleasant		√	Swimming, Playground
Capitol Hill		√	Soccer, Baseball, Playground
Tuxedo park	√	√	Baseball
Thorncliffe Greenview		√	Baseball, Playground
Winston Heights Mountainview	√	√	

This Table list the community names and the available community sites

The map below shows the locations and recreational spaces shown in the tables. The icons for soccer, baseball, playground, community gardens, basketball courts, tennis courts, toboggan hills, etc. are shown.

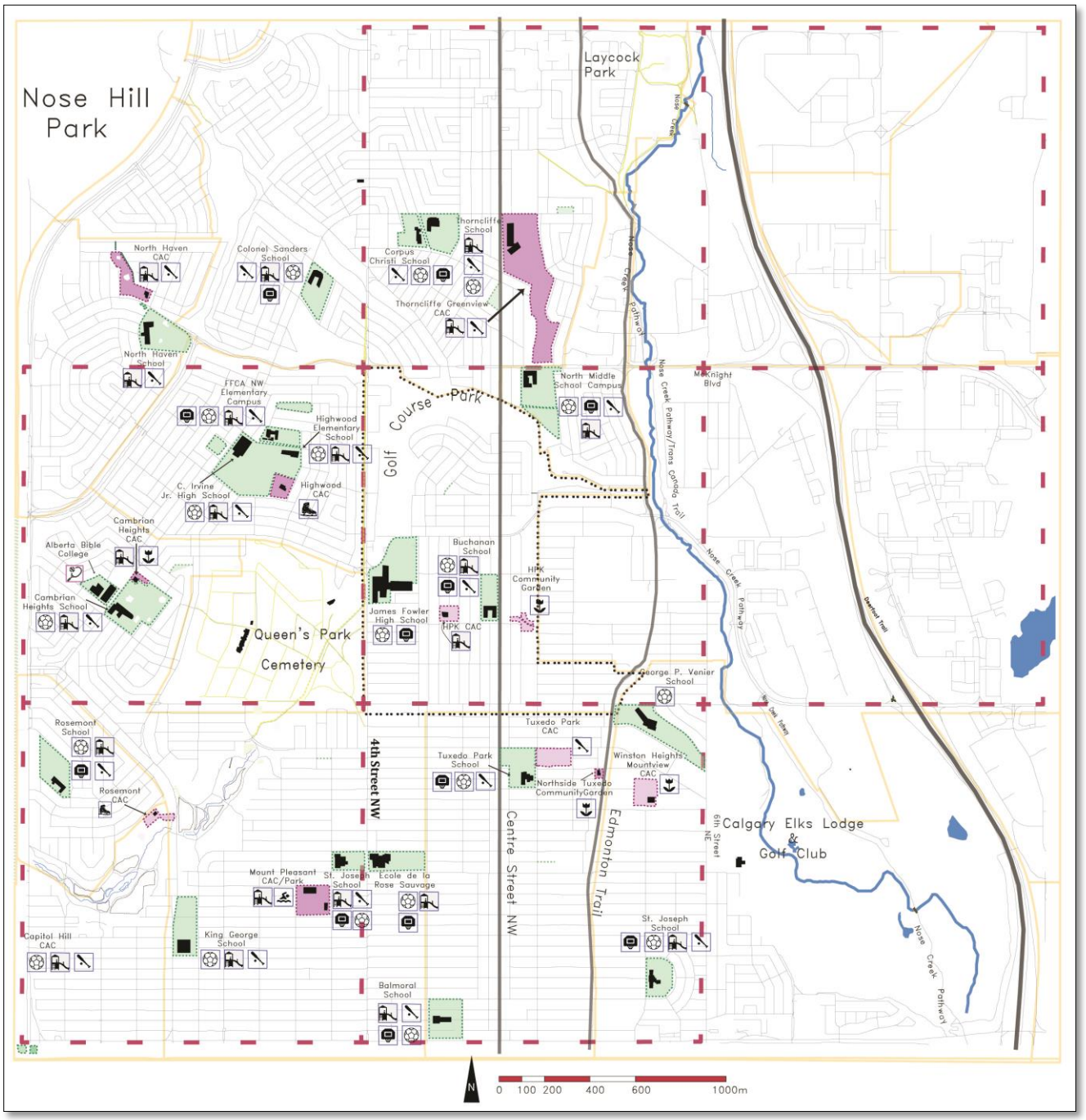


Figure 21 location of recreational sports activities across 9 sections surrounding Highland Park

The map on the next page shows the location of dog off-leash parks which are located and enjoyed by people of local communities with their dogs.

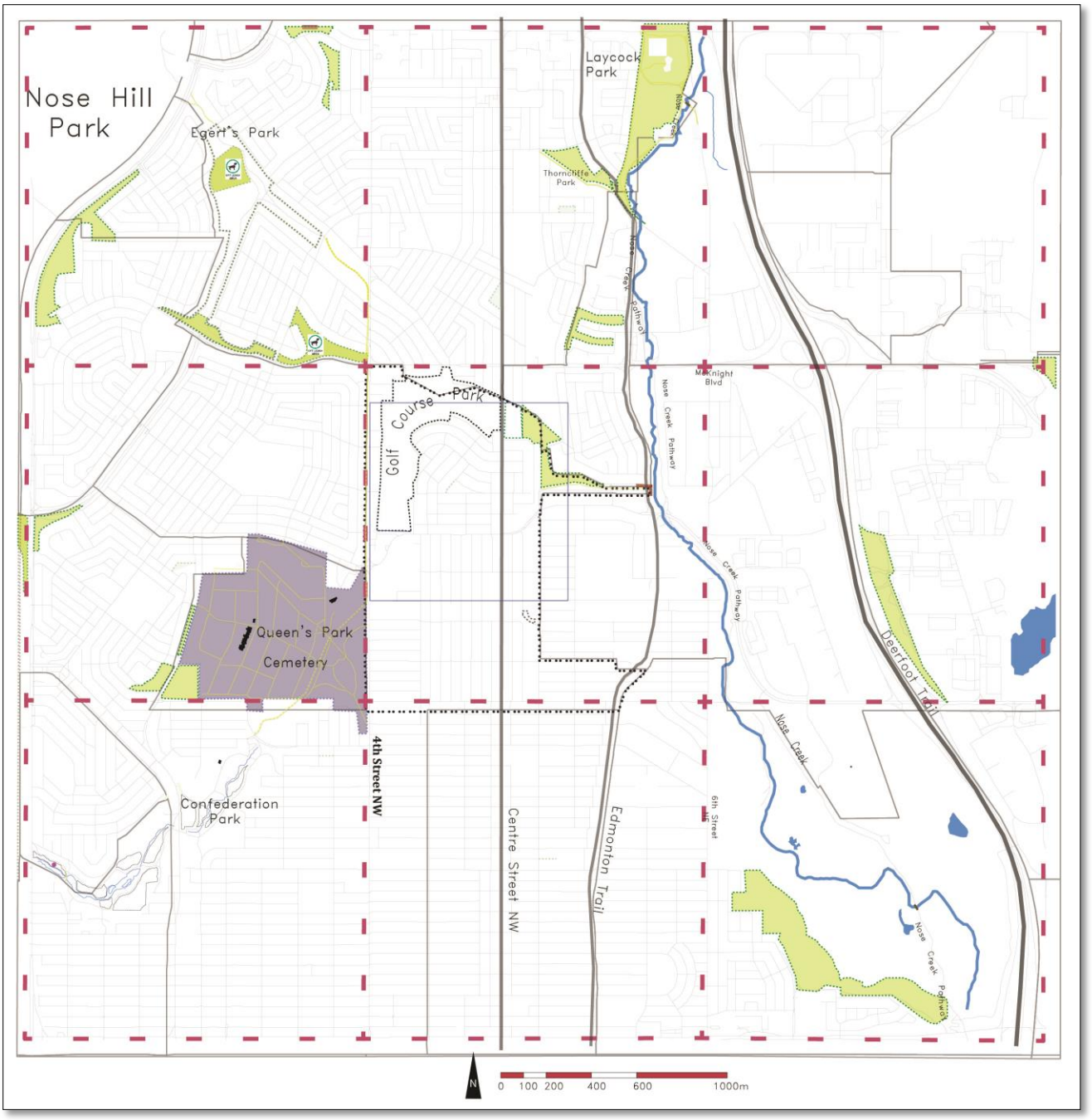


Figure 22 Location of off-leash Dog parks across 9 sections surrounding Highland Park

The following map shows the recreational amenities in natural and created parks such as Nose Hill Park, Laycock Park, Confederation Park, Golf Courses, Thorncliffe Park, Munroe Park etc in the study area.

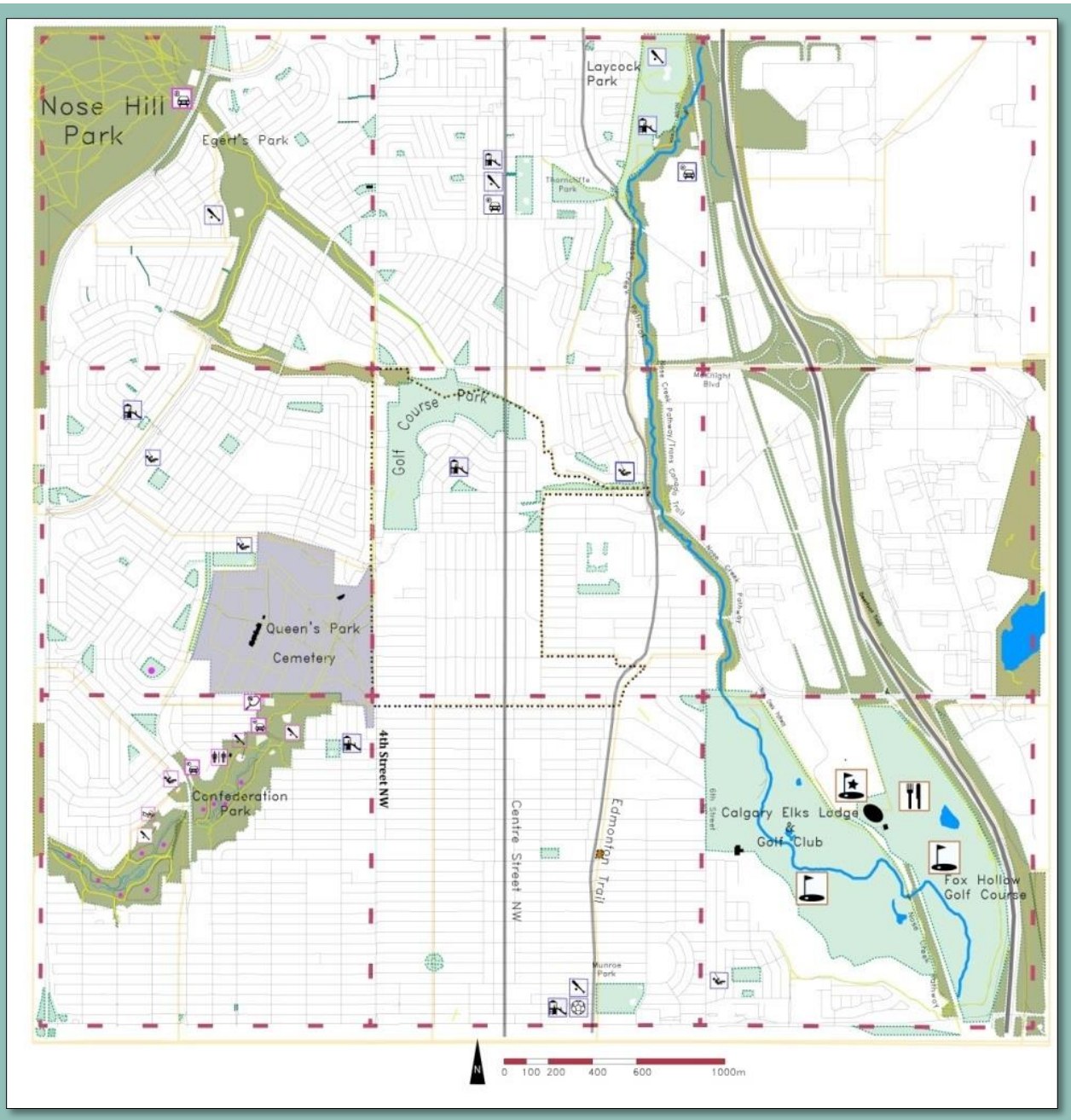


Figure 23 Map of Parks Surrounding Highland Park

Picnic sites
Restaurant
Indoor driving range
Public Golf course
Dog off-leash
Community garden
Community district
Water creek
Playfield
Regional Pathway snow removal
Regional Pathway
Green Corridors/linkage
Outdoor recreational/ sports field
Landmark
Natural/semi-natural
Building Footprint
Tennis
Washroom
Parking
Basket ball
Base ball
Ice skating
Taboggan
Playground
Soccer
Tot lot

Legend for Off-leash Dog, Recreational Amenities, Open Spaces, and Sports Parks Across 9 Sections Maps

7.2 Plan

Section 2.3.4Open Space Plan Calgary
Providing high quality recreational park following the topography, with proper connectivity, providing active recreation and passive recreational needs for all ages and abilities with pedestrian/bicycle-oriented amenity
Free from shadows of surrounding existing buildings to utilise maximum sun exposure during winter
Practical Turf Areas - Plant grass in areas that will be used for recreation only. Decks, patios, rocks and gravel are good alternatives to grass

MDP 2009
2.6.4: Ecological network maintaining biodiversity and landscape diversity, connecting ecological networks.

Site Analysis of open Space at 36 Av NE: The following map shows the analysis and the concept used to design a recreational space at the 36Ave NE and Centre Street Intersection based on the above policies.

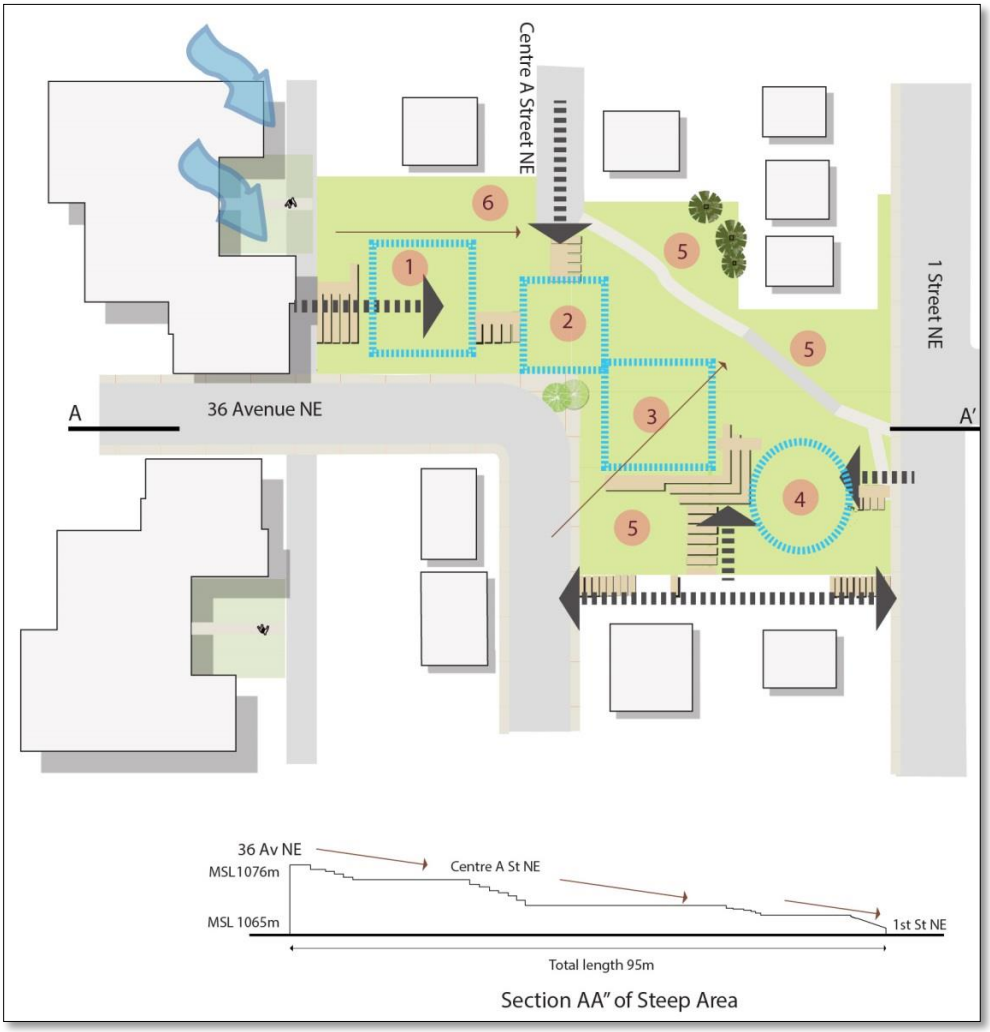


Figure 24 Plan of Designed Open Space as per the Developed Policy Guidelines at 36 Av NE and Centre Street

1 Site viewing Deck

2 Connecting Deck

3 Open Library, gazibo, Chess

4 Fire pit, Barbeque, Chess

5 Open Gymnasium, Play ground, Community garden

6 R-ope climber, toboggan hill, slider

Figure 25 Descriptions of the Numbered Locations on the Plan of Designed Open Space at 36 Av NE and Centre Street

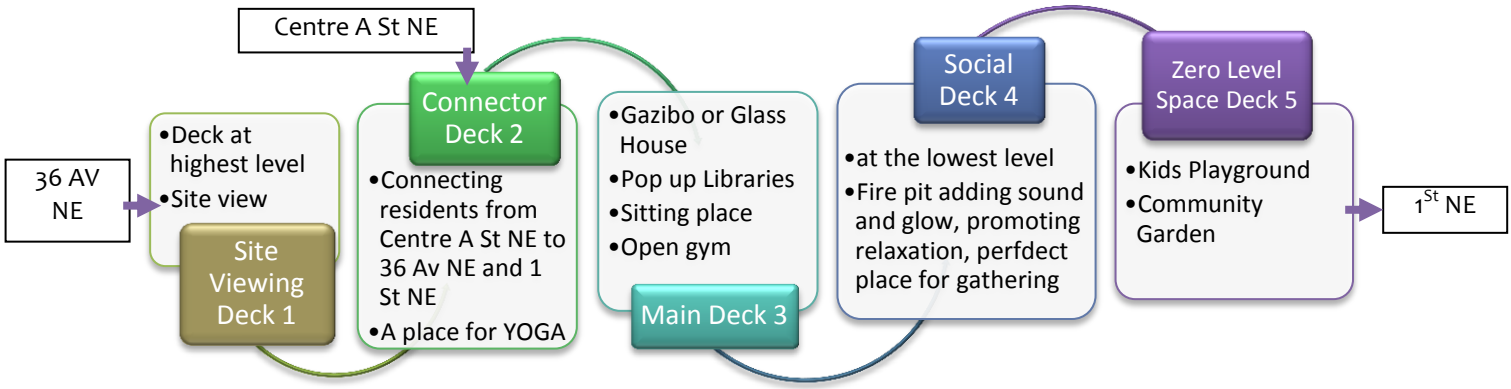


Figure 26 Flow of Recreational Amenities Based on the Numbered Site Points on the Designed Open Green Space at Centre Street and 36th Av Intersection

The existing open space is at a steep slope of 12-15% located at 36 Av NE. The concepts behind the proposed design are as follows:

1. Paseo designed to pedestrian scale with wide vision angle due to natural topography
2. Amenities for all ages and seasons at different terrain levels
3. The space is acting as a connector from all four directions
4. Usage of wooden decks to maintain the water permeability and avoid run-off from the space
5. Usage of the natural steep slope in creating activities like sliding, tobogganing, climbing grips etc.
6. The slope aspect against north-westerly wind protecting the space from winter
7. Exposure of sun throughout the year due to surrounded single residential land use

Although the concepts are explicit, a final plan and 3d design is recreated for a better view of the designed open space at the currently unused shabby looking open space. Such a design is also expected to increase the cost of neighbouring open spaces. A major aspect of design is its steep slope which limits the construction of any massive structure development or residential spaces. The following map shows the detailed amenities as A to L with subsequent precedents to show the real look of the proposed design.

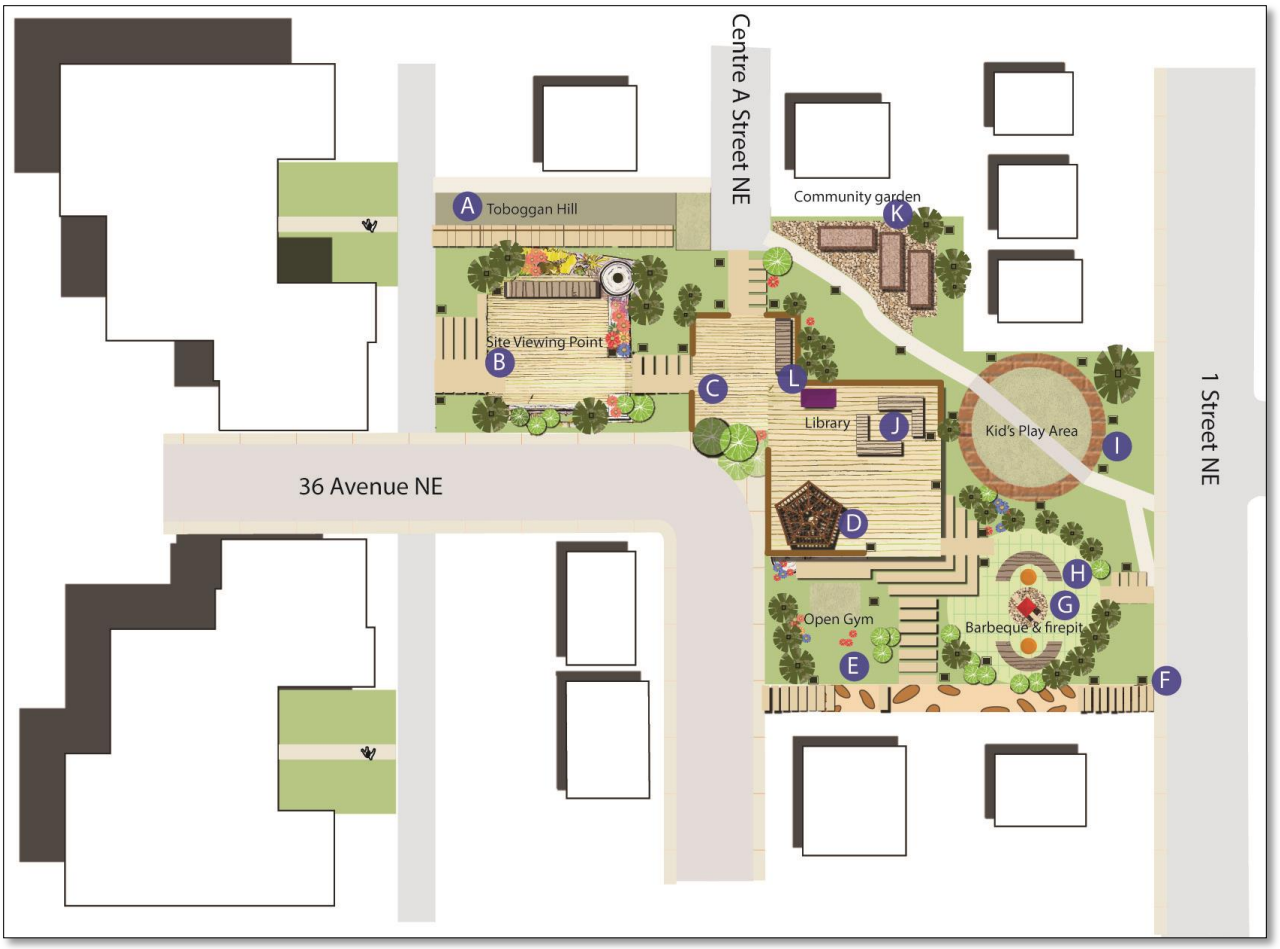


Figure 27 Detailed Map of Designed Open Space Across 36 Ave Intersection Where Each Marked Alphabet Shows the Recreational Activities and Spaces for all Seasons and Ages

The following are the precedents showing the detailed landscaped design for the designed open space.

Level 1 Deck

[A] Sliders/Toboggan Hill at Somerville, Massachusetts

Level 1 Deck

[B & C]Site viewing deck, Durango, Mexico

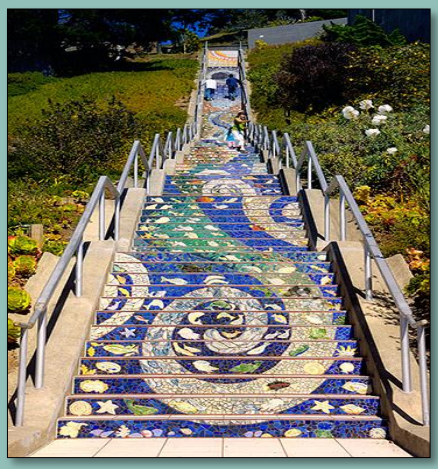
Main Level Deck

[D] Gazebo at the Deck

Adjacent to Main Level

[E] Open Gymnasium

All Levels Connectors



[F] Public Art on connecting Stairs, San Francisco

All Deck and Connectors

Defused lights at decks to reduce light glare

Main Level Deck

[L] Little free Neighbourhood Library

Main Level Deck

[J] Sitting corner at wooden deck

Ground Level

[G] Fire Pit at the lower level of the space, Keller, Texas

Ground Level

[H] Open Chess as recreational space

Figure 28 Park Precedents

The figures below shows the view of the designed open green spaces with patio decks, and trees like cherry blossoms, deciduous trees along the slope of the area. The design also depicts the accessibility of disabled people and seniors. In addition, the levels are not too high which makes it more accessible to seniors. While top view from 36th Avenue NE and Centre A Street show the gentle difference in levels and sitting benches, the view from 36th Avenue NE and 1st Street NE shows connectivity and amenities for recreation like barbecue and fire places.

View from 36th Avenue NE and Centre A Street

View from 36th Avenue NE and 1st Street NE

Figure 29 Designed Green Recreation Space for All People and Season

8. Street

8.1 Street Design Guidelines

In Highland Park, the local residential streets are 8-10 meters wide. The section below shows the street elements in terms of horizontal and vertical environment. The horizontal elements include roadway, public realm and interface zone where as vertical environment include trees, street lights, and signs in aerial zone. (Source: 2011 Interim Complete Street Guide, page 16)

Cross Section of Local Street, HPK

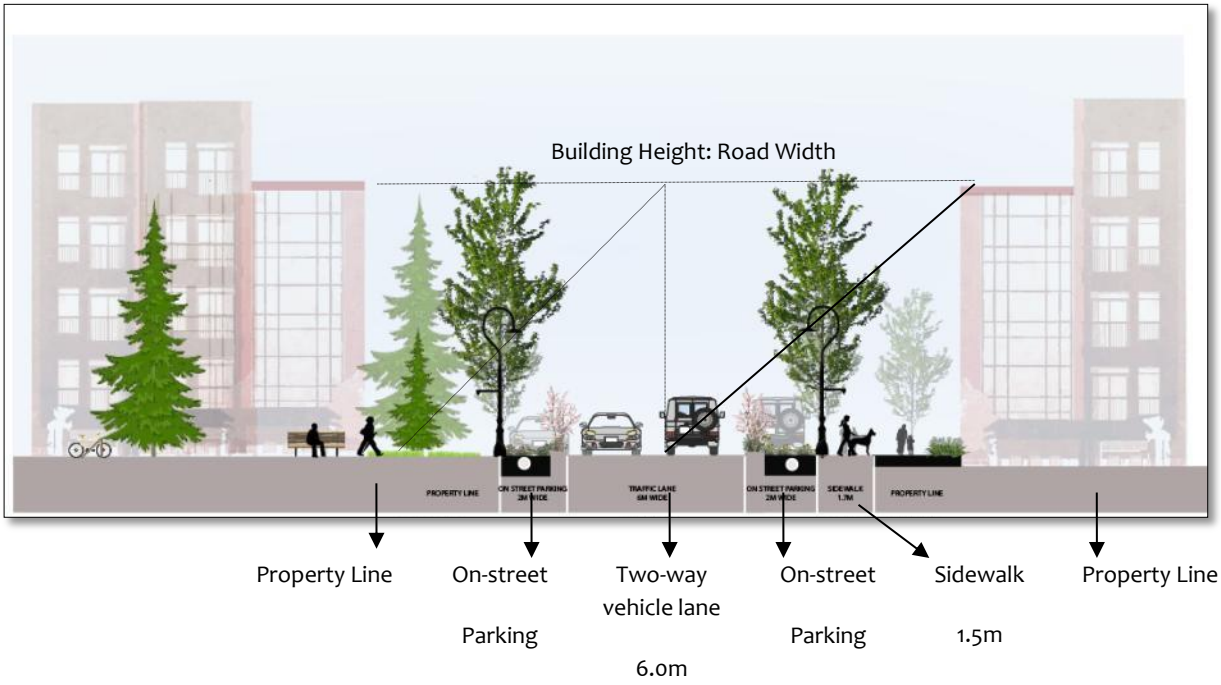


Figure 30 Streetscape Elements with Vertical Setbacks for Better Sun Exposure

The ratio of building height to road width generates spatial enclosure. According to urban design principles, smaller the ratio better is the sense of place. The ideal ratio is 1:2 (Building height: road width). It also helps in mitigating shadow impact due to tall buildings adjacent to roads. The street trees also help in reducing the scale of buildings and form an enclosure. Below is the plan showing curb extension for pedestrian safety and on-street parking.

Calgary Municipal Development Plan 2009 (MDP)
2.2 Shaping more compact urban form
2.3.4 Recognizing the role of complete streets and the sidewalk system to act as recreational spaces, enhancement of visual character of the streets by providing floral trees and creation of a buffer from traffic to reduce the impact of vehicle traffic
2.3.3 Heritage and public art integrating works of art within the public realm
2.6 Conservation and protecting ecosystems
2.4.3 Provision for bike parking space, clear way finding signage, street maps, and facilitation of all kinds of travel modes

Calgary Transportation Plan 2009 (CTP)
(page25) The bike racks near transit station connects bike trips to transit trips enable rider to bypass topographical barriers and increase transit ridership
3.7 Sustainable green street design is provided to reduce negative impact on environment

Centre City illumination Guidelines 2011
Illuminating bike lanes and sidewalks safeguard the urban landscape

Crime Prevention through Environmental design Guidelines (CPTED)
Pedestrian-scaled street light posts

Pedestrian Design Guide
Changes in elevation to be designed with smooth ramps with recommended slope of 4-5%

Figure 31 Plan showing Curb Extension & Design Elements on Local Street

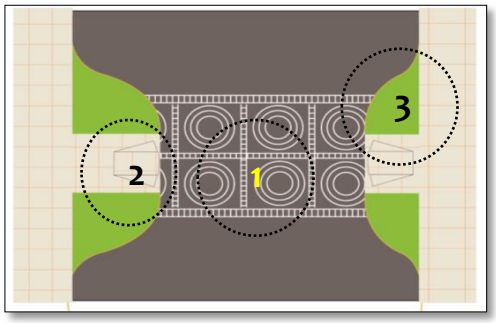
1. Curb Extension
2. Raised, illuminated and well highlighted crosswalks
3. On-street Parking shared by vehicles & bikes
4. Benches and bio-swales
5. Gentle sloped ramps for people with disability issues
6. Street trees with multiple canopies such as bio-swales or in filtered plantation etc.
7. Pervious paved sidewalks

Street Design Elements

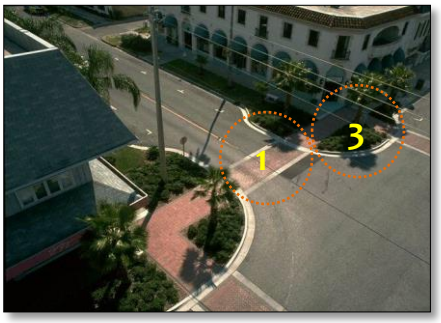
Design Elements on streets and along the streets	
Mid-block crossing	Plantation for storm water management
Characteristic of sidewalks	On-street parking for cars, and bikes
Public art	Street and sidewalk lightings

In order to achieve maximum benefits from the community streets, certain guidelines are provided [8]. This will help in creating a great pedestrian environment. These guidelines are mainly focussed on street intersections, sidewalks, and other essential amenities for healthy, vital and thriving public realm in Highland Park.

Mid-block crossing with curb ramps and raised crosswalks: Raised highlighted crosswalks at pedestrian crossings helps in reducing the traffic speed al local streets. Road width is reduced by providing curbs. The curbs make the pedestrian comfortable while crossing the roads in the mid blocks. This should be provided near to school sites, shopping areas, churches, etc. Mid- block crossing in the form of raised refugee island can be provided in Centre Street [6]. Pedestrian crossing should be provided with adequate lighting during night.



Mid-block crossing by raised highlighted crosswalks



Precedent shows mid-block
Source:
http://www.techtransfer.berkeley.edu/newsletter/03-2/crosswalk-pics.php

1. Raised crosswalk

2. Ramped curb extension

3. Bio-swales

Figure 32 Mid-Block

Characteristics of good quality Sidewalks

Sidewalk on one side of the road with width between 2.5-3m with group of benches and a public street art make the street more vibrant and interactive public space. As per the pedestrian policies page 9, the recommended sidewalk width is 1.5m to 2.2m where two people using mobility devices can pass each other and is defined as a Pedestrian Friendly Width. Streetscape furniture like benches, flower pots/ beds, decorative light poles, a public art and a garbage bin attract the pedestrian for staying and relaxing in the space [7]. Slip resistant and unobstructed materials can be used to decorate the surfaces of the sidewalks. The decoration also improves the aesthetic quality of the sidewalk. However, the art should not create difficulty for people with vision impairments to identify the detectable warning signage. Levelled surfaces should be used for people with mobility issues. Changes in elevation should be designed with smooth ramps with recommended slope of 4-5%. Changing in levels such as providing projected tree boxes, bulking of pavement due to improper workmanship causes problem in sidewalks and make it less pedestrian friendly. Gaps and grate should be designed so that a gentle slope is created. Also, curb ramps with a gentle slope make disables and seniors to cross the road comfortably.

Figure 33 Sidewalk Width for the People of All Ages and Abilities

Illuminated crosswalks, sidewalk & bike lanes: The smart crosswalk traffic calming system is proposed where the lights are built into the road system. The lights activates as the pedestrian starts walking on the crosswalk. This will reduce the night time accidents. Pedestrian activated crosswalk lights blinks when the pedestrian start crossing the street.

Figure 34 Illuminated Crosswalk Which Makes the Crossing More Noticeable in Seattle
Source: http://www.streetsblog.org/2009/03/18/streetfilms-tap-foot-lights-blink-cross-street/

Illuminating bike lanes and sidewalks humanize the urban landscape. The sidewalks at special streets like Centre Street can have low level plane of light which keeps the sidewalk visible and encourages people to walk during winter nights.

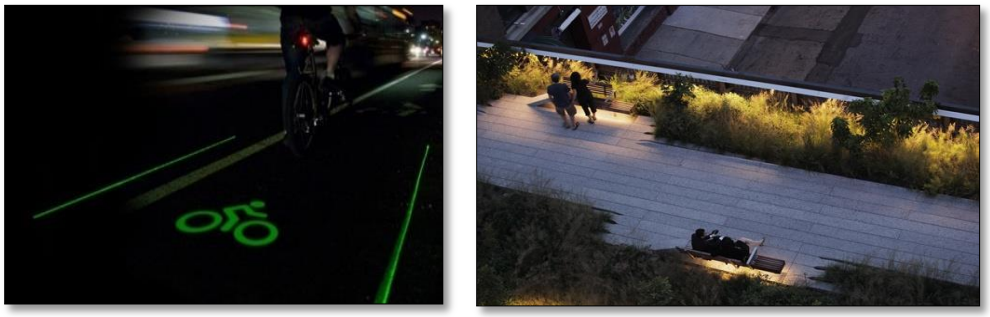


Figure 35 Illuminated Bike Lanes and Sidewalks for Safety
Source: High Line Park, NYC

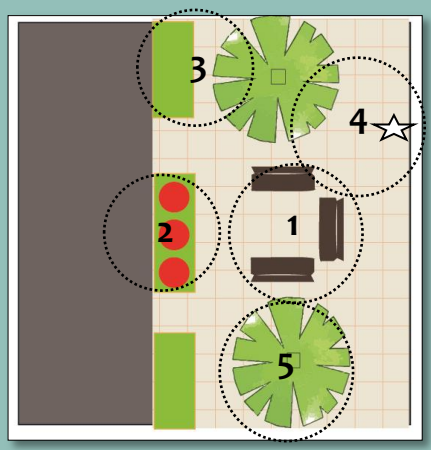


Figure shows wider sidewalk with benches, public art

Circle 1. Source: Kings Street, Ontario, Benches at the street next to Fitzgerald Park, New Jersey

Circle 4. shows merged public art on the surface of sidewalk, Ohio Source: http://valsartblog.blogspot.ca/2012_04_01_archive.html

Circle 5. shows tree roots uprising the sidewalk

Circle 1. shows sitting space as a rest space for the pedestrians Source:http://www.techtransfer.berkeley.edu/newsletter/03-2/crosswalk-pics.php

Figure shows warning mats for visually impaired people
Source:
http://fltranscor.com/proddetail.php?prod=detectable-warnings-flexible-mat

Figure 36 Sidewalks

1. Group of benches as rest area

2. Street public art

3. Bio-swales

4. Merged public art on the surface of sidewalk

5. Trees with tree boxes are properly levelled with sidewalk surface

Street

Public Art: Public art next to streets engages the pedestrian, attracts tourism, and improves public realm. Benches along street art promote local business and culture. It becomes a place to relax and enhances social capital. These public arts along the street act as buffers and makes street feel safe and comfortable to walk.

On-street Art

Figure 37 Public Street Art of Human Scale, Easy to Maintain
Source: Great Square, Malmo, Sweden

Street Storm water Management System-Green streets: "Green Streets are neighborhood streets with storm water management features, often utilizing natural elements, which can remove and filter storm water runoff before it reaches the storm drain", [http://brooklyncountrylane.wordpress.com/what-are-green-streets/].

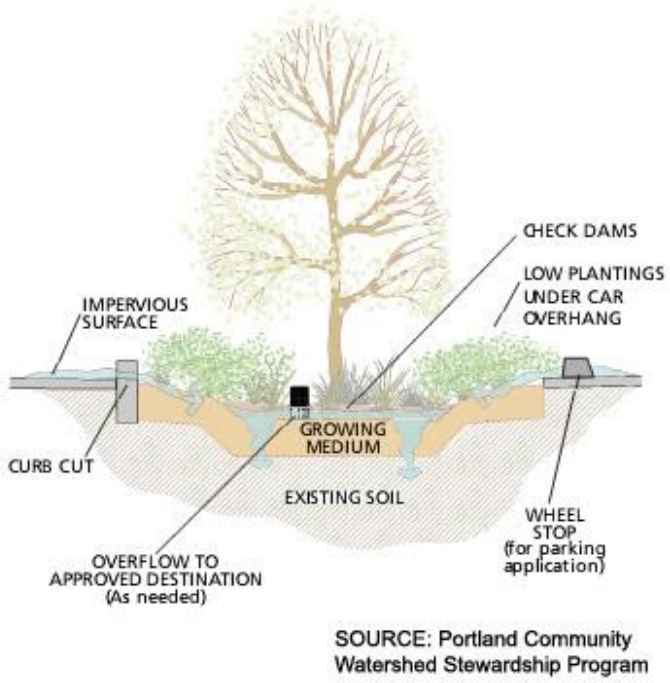


Figure 38 Green Streets

Benefits of Green streets
1. Storm water control measures besides streets Curb planters help in storm water management.
2. Increases onsite infiltration
3. Enhances the aesthetic of the environment
4. Helps in water conservation (xeriscape)
5. Helps in reducing street flooding
6. Reduces sewer backups in basements
7. Improves quality and level of underground water
8. Enhances Biodiversity
9. Provides potential for wildlife habitat
10. Discourages pedestrian trampling by using low curbs

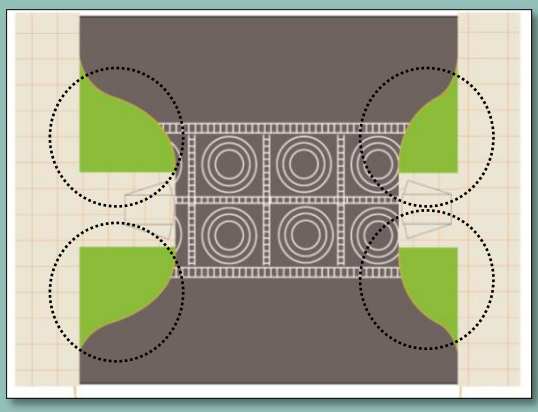


Figure shows the vegetation along curb extension

Figure shows curb cut with low vegetation
Source: http://brooklyncountrylane.wordpress.com/what-are-green-streets/

Figure shows fixed or movable on-street planters

Figure shows fixed and cemented on-street planters

Figure showing dual on-street planter with benches.
Source: **www.bizjournals.com**

Figure showing movable rolling on-street planters Source: http://ybsurvey.tumblr.com/

Figure 39 Curb Extensions

Bike racks on street & along streets (ROW): On street parking lane is shared with bike racks having almost same size as that of one car. Ten bikes can easily be fitted promoting bicyclists for sustainable mode of transportation. This makes the sidewalk free from the space.

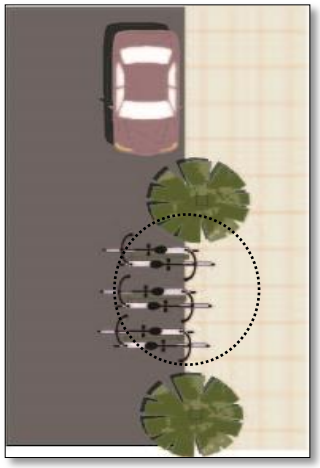


Figure shows shared space for parking on-street by bikes and cars

Figure shows on-street shared parking in Boston
Source: http://allstonbrightonbikes.bostonbiker.org/

Figure 40 Bike Racks

Pedestrian–oriented Street Light System: Pedestrian-scaled street light posts (CPTED Guidelines) at around 15 feet height attached with 30 feet street light pole lighten the sidewalks, creates safer place, and encourages biking and walking at night. Usage of energy efficient LED helps in reducing light pollution where by reducing glare and brightening of night sky. According to crime prevention through environmental design guidelines, the sidewalks should be well lighted for encouraging the visual connections and for natural surveillance. Street names should be visible by proper signage.

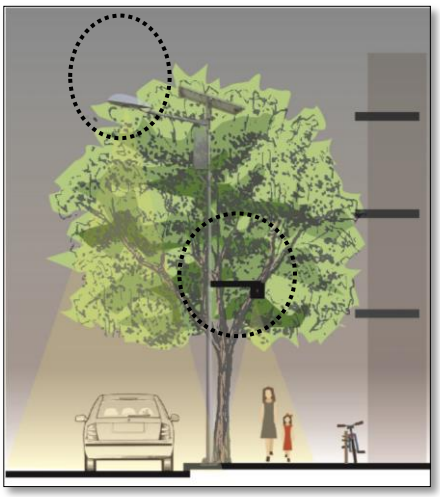
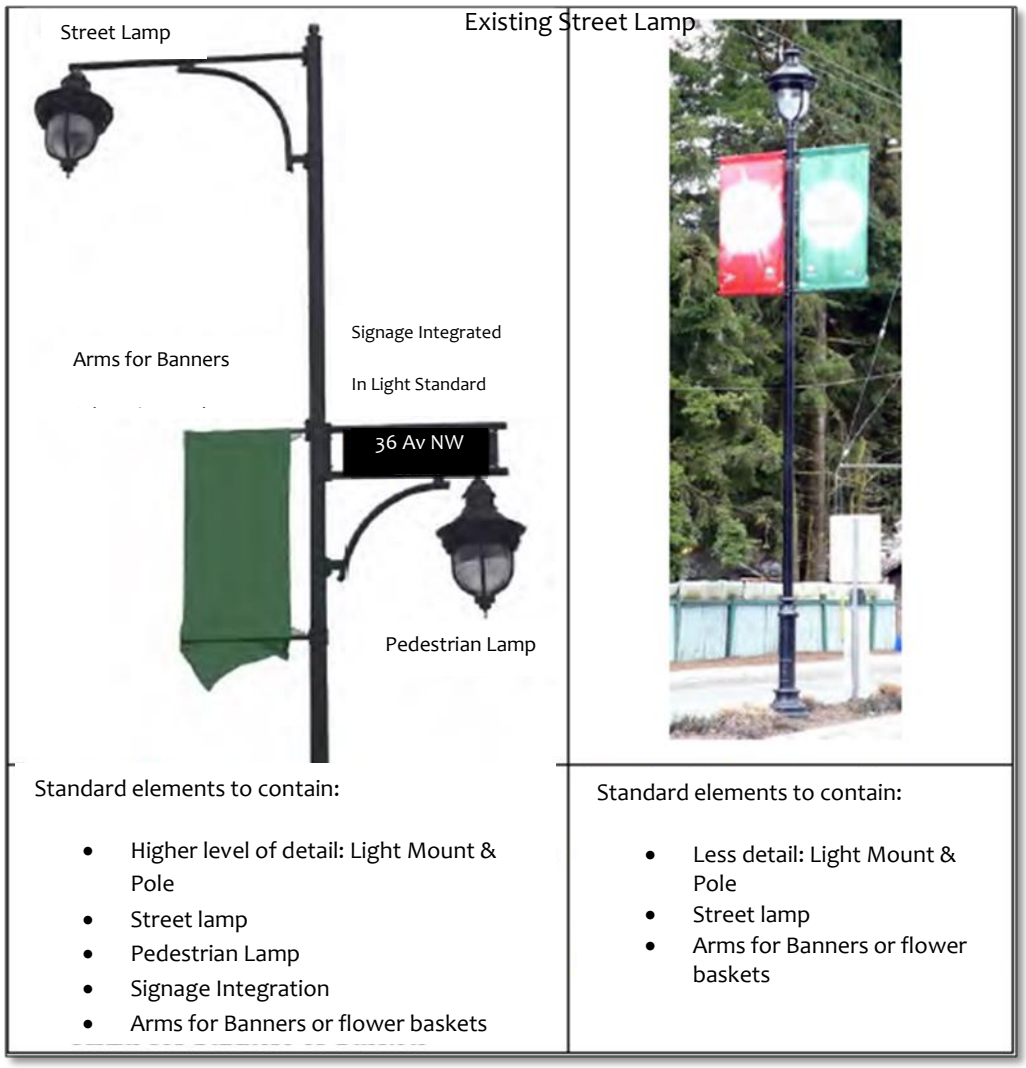


Figure showing pedestrian focussed street light Reducing light pollution and providing safe environment to walk

Figure shows the lamp post used for dual purposes. It is lighting the street and the sidewalk
Source: Beverly hills, USA
http://www.rallystl.org/ideas/detail/33,

Figure 41 Lighting

Street signage: Street Signage should be designed to reflect traditional image of the community. It should be placed at human scale so that the street name can be readable and visible during night.



Source: http://sfb.nathanpachal.com/2012_05_01_archive.html
Figure shows an example of light pole based on traditional look at Central Gordon Estates Neighbourhood Plan in Township of Langley

Figure 42 Proposed Street Lamp Elements

Artistic crosswalks: By providing artistic crosswalks, the local art in public spaces enhance the beauty and vibrancy of the surrounding. Crosswalks can be designed to resemble a piano which produces sound if walked upon.

Figure shows piano type crosswalk in Brooklyn

Figure shows Artistic sidewalks
Source: Salzburg, Town of Ocean City New Jersey

Figure 43 Crosswalks

Golf Course:

1. The main road of the golf course should have at least one lane and one parking lane for each side with width of the parking lane at least 2.4m and the vehicle lane should be at least 3.2m.
2. There should be bike lanes and sidewalks on at least one side of the road.
3. Basic street furniture should be provided, such as lamps, benches, bike racks and dust bins.

8.2 Urban Forest

There are 3 approaches to building a thriving urban forest in the community. The first will be to increase the number of trees in the already existing urban parks with particular attention to improving the Edmonton Trail park on the rear of the industrial operations along 41st Avenue. As per recommendations in section 4.4 and policy 4.4.4 a landscaping program should be established to work on improving the transition between industrial use and the park and adjacent residential uses. Trees should be planted within both the public and private realm to provide visual and acoustic buffering from industrial activity.

The second approach will be to plant new street trees. The third approach will be to protect existing street trees particularly during redevelopment in streets which are identified as having an already mature urban forest. When building an infill the existing tree in the lot should not be removed. At least a 7 meter deep setback from the property line should be kept for trees and vegetation.

Goals & objective of Urban Forest strategy in Highland Park

Goals	Objectives
Maintain and enhance the existing urban forestry [4]	Provide species diversity Maintaining existing trees for future generation
Following tree protection bylaws strictly [5]	Removal of trees when required as per City of Calgary, Tree protection bylaws
Retain more trees on development sites	During infill development, trees should be at least maintained and more should be planted
Planting various types of trees and in correct locations	Fruit & flower bearing trees, low and high height trees, deciduous and coniferous trees, shrubs, creepers, bushes, grass which require low maintenance, trees with different canopies
Proper on-street tree species selection	To avoid conflict with over and under utility infrastructure, roofs of adjacent buildings, eye level views, remove obstacle to pedestrian & road traffic

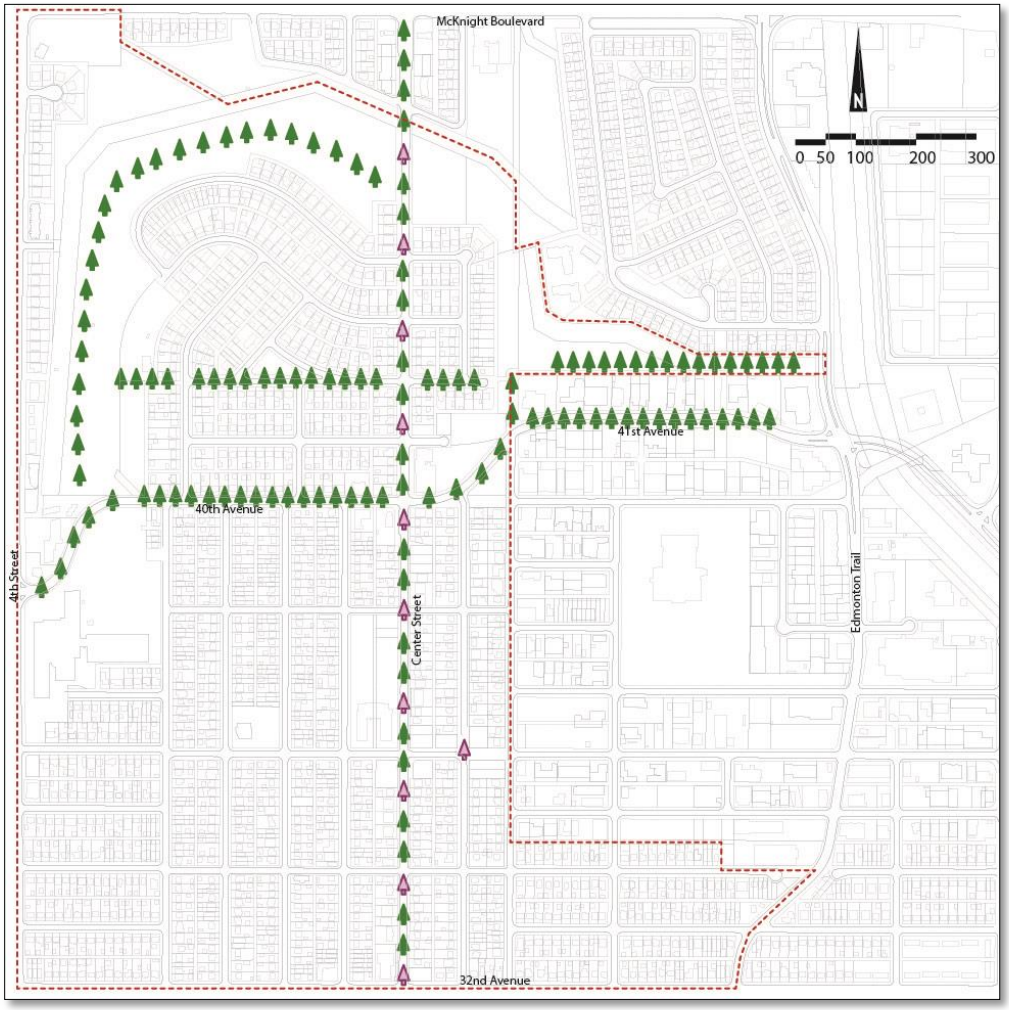


Figure 44 Priority Streets and Park Locations for New Trees

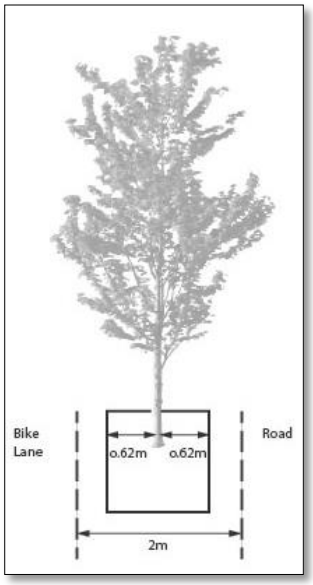


Figure 45 Street Tree Planting

8.3 Center Street

The third approach will be to protect existing street trees particularly during redevelopment in streets which are identified as having an already mature urban forest. To give special effect to Centre Street, plantation of seasonal floral trees such as Cherry Blossom is proposed. A spring flowering tree will lift up the mood after very long dismal winter. Along with floral trees, orchard can be grown which can give local food to residents, birds and animals. Floral trees in the middle of deciduous and coniferous trees will give warm feelings; provide fragrance, attract birds for food also increasing property land value. These trees are called columnar ornamental trees. Some of the examples are mentioned on the next page [1].

Pink Spires Flowering Crab is clothed with clusters of fragrant pink flowers. It can be planted in the recreational open space and in plazas like community heart, along the proposed bike routes in golf course. Also, planting coniferous trees along streets prevent the pedestrian from north-westerly wind. The tree provides an enclosure to the pedestrians and also helps in reducing the scale of the adjacent buildings.

MDP 2009, City of Calgary
2.6.4, Urban Forestry, Encouraging new trees, bushed, plants in new development like plazas, cluster buildings etc.

2011 Interim Complete Street Guide Section
8.3.1 Incorporation of native trees along urban corridors reduces urban heat island and pollution
8.3.2 Usage of tree trenches helps in reaching high level of maturity.
8.3.3 Protection of existing trees in redevelopment scenario

8.4 References

[1]"Neighbour woods Residential Street Tree Planting", 2014 tree species list, The City of Calgary
[2] "Fruits trees grows well in Calgary', Chinook Landscaping & Design Inc.
[3] "Calgary leading home and garden centre", Sunnyside Greenhouses ltd.
[4] "Developing Vancouver's Urban Forestry Strategy", http://vancouver.ca/home-property-development/urban-forest-strategy.aspx
[5] Tree Protection Bylaw, City of Calgary
[6] "Mid-Block Crossing",http://www.fannocrossinghall.org/files/fhwa-crossing-course_1.pdf
[7] Accessible sidewalks & street crossing, Department of transportation, USA
[8] Street design elements, NATCO Urban Street Design Guide, http://nacto.org/usdg/street-design-elements/
[9] Brooklyn Country lanes, "What are Green Streets?", http://brooklyncountrylane.wordpress.com/what-are-green-streets/

Sorbus aucuparia 'Rossica', [Height 13m, Spread 3m]
This stunning pyramidal accent tree makes the streetscape colourful and moody whereby featuring clusters of white flowers in the spring, orange-red berries in winter. Its Leaves turn orange and yellow in the fall. It shows its presence throughout the year. These trees can go well with deciduous trees along Centre Street

Rosthern Columnar Crab Apple [height 5m, Spread 2m]
This tree has dark green foliage throughout the season. In mid spring, this tree covered fully white fragrant flowers. This is a good choice for attracting birds to your yard. An attractive tree with fragrant, white flowers in the spring and glossy green foliage throughout the growing season. This cultivar does not produce fruit. It can be planted at new development proposed along 40/41 Av HPK.

Pink Spires Flowering Crab apple [1]
(Malus 'Pink Spires') [height 4-5m, Spread 3m]
Pink Spring flowering crab is covered with clusters of fragrant pink flowers. It can be planted in the recreational open space and in plazas such as community heart, along the proposed bike route in Golf Course

Norland Apple tree [3]
Always good to grow fruit trees like apple, pears in parks and along streets. It helps in boosting local economy, in encouraging people to enjoy some moments playing with nature & knowing the importance of their existence in their locality. These trees have attractive flowers and fruits to attract birds. [2]

Figure 46 Street Trees

9. Connectivity

Connectivity examines the vehicle, transit, bike and pedestrian networks within Highland Park and how they integrate with the larger networks in the surrounding communities.

9.1 Analysis Background

The residential road network within Highland Park is predominantly permeable grid with gravel alleys. Sidewalks are available throughout the neighbourhood mostly on both sides of the road which means Highland Park has a very high walkability potential. Note that the industrial park adjacent to the community lacks sidewalks and in some cases has no sidewalk on both sides of the road. The sidewalks beside some of the high traffic roads, for example along Centre Street, are narrow and would be more pedestrian friendly if widened.

There is an excellent trail system to Nose Hill in the N.W., Confederation Park in the S.W. and Nose Creek in the east. There is however connectivity missing in the center of Highland Park which would join all of these trail systems together into one large network. The golf course is ideally located to provide this missing connection.

There is a good bike network running through the neighbourhoods however the infrastructure is lacking safety. In order to promote the use of bicycles it is recommended separated bike lanes be introduced especially along already existing bike routes which run along heavy volume roads like 40th and 41st Avenue's. Centre Street, a major activity corridor for the area lacks a bike route.

Access to major roadways is very good with ample connection to Deerfoot Trail which quickly takes traffic north/south and McKnight Blvd which provides good east/west access. The bus service provides good community connection to the larger network and the frequency is adequate.

The City of Calgary has already made a decision to run a transit service north, this line can initially be serviced by bus rapid transit (BRT) but will eventually be serviced with a low floor tram. Trams are capable of accommodating sharp bends and steep gradients. Their design uses level boarding which improves accessibility. Tram vehicles are considered medium capacity, carrying from 4,000-10,000 passengers per hour per direction. An interim solution will use BRT on the designated tram line lanes. These buses can quickly integrate into the current road system and once the tram line is built they can be relocated to service a new route in the city. In the short-term BRT will be able to transport up to 2,000- 4,000 passengers per hour per direction.

The tram line should be located within the Center Street right-of-way; this is based on a number of factors:

- As Calgary grows there are more residential communities built on the extremities of the city. A large segment of this population is already commuting to downtown passing through inner city communities like Highland Park at both ends of rush hour. This is resulting in a high volume of vehicle traffic along Center Street at these times of day and as Calgary expands this issue will likely worsen. A rapid transit option needs to be considered to help alleviate this traffic congestion problem.
- The Center Street option was overwhelmingly the rapid transit corridor choice for community residents as per the community Vision session held this winter.
- The topography along Center Street has a more even gradient change as you travel northwards compared to Edmonton trail which has some steep ups and downs, the gentler gradient will be more preferable for laying track and running both BRT and tram vehicles.
- The route from downtown to the north of Calgary is more direct along the Center Street corridor when compared against the Edmonton Trail and 4th Street options which would require some turns.
- A transit route along Edmonton Trail will have an environmental impact on the Nose Creek watershed; in addition the proximity to the river will require a 30m buffer which may be an issue in some locations along this route.

Figure 47 Highland Park Area Infrastructure

Figure 48 Trail Through Queen's Park Cemetery

Figure 49 Poor Bike Infrastructure On 40th Avenue

Figure 50 Centre St. Wide ROW, No Bike Lane And Narrow Sidewalks

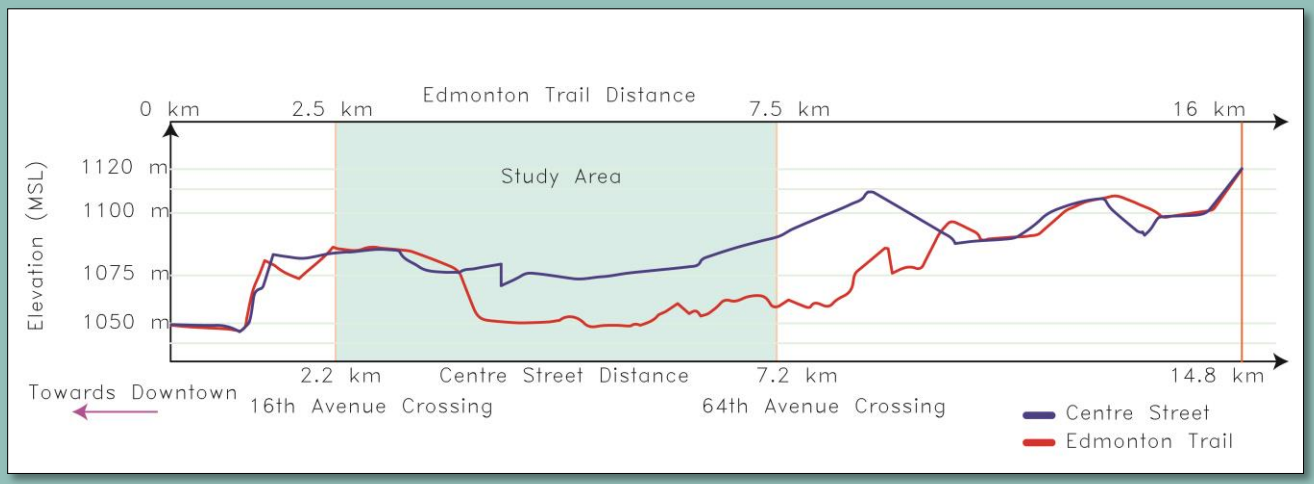


Figure 51 Centre Street and Edmonton Trail Topography

- Typical right-of-way along Center Street is 30m which can easily accommodate the required 2 lanes for a BRT and eventual tram line.
- The Center Street route will pass through more activity nodes and higher density residential than the other options, this will help increase mid-route ridership.

9.2 LRT and LRT Station Design Guidelines

As mentioned earlier the Center Street right-of-way is largely 30 metres, this is the case between 16th Avenue and 21st Avenue and north of McKnight Boulevard. Through the Highland Park community there is some variation in the right-of-way with the narrowest section being only 20 metres. With this in mind careful consideration of how to configure the road through these sections needs to be made. Street cross sections, showing the transit lanes which will be 3.5 metres wide, are provided in section 15.2. It is recommended that the trams purchased will be guided vehicles; these allow you to run on narrower rights-of-way and their ability to precision stop at shorter length stations will be an asset. Conventional steering can be used along non-guided sections of the system. The BRT or tram service should be given signal priority to speed up service and where possible platforms should be placed on far sides of traffic lights so as to clear transit through intersections with minimum delays.

The designated tram lanes will run up the east side of Center Street. Currently there are driveways on this side of the road but with the new land use designs proposed along Centre Street these will be replaced by side road access. This

will reduce tram delays due to vehicles crossing the line to gain access. Placing the lanes on one side of the right-of-way will also allow the northbound stations to be located beside the sidewalk eliminating platform access issues for this direction. Southbound platforms will be in the center of the right-of-way so crosswalks will have to be carefully added so as to provide safe access. Frequent crossings need to be provided across the route so that the tram line does not present a barrier to pedestrian flow.

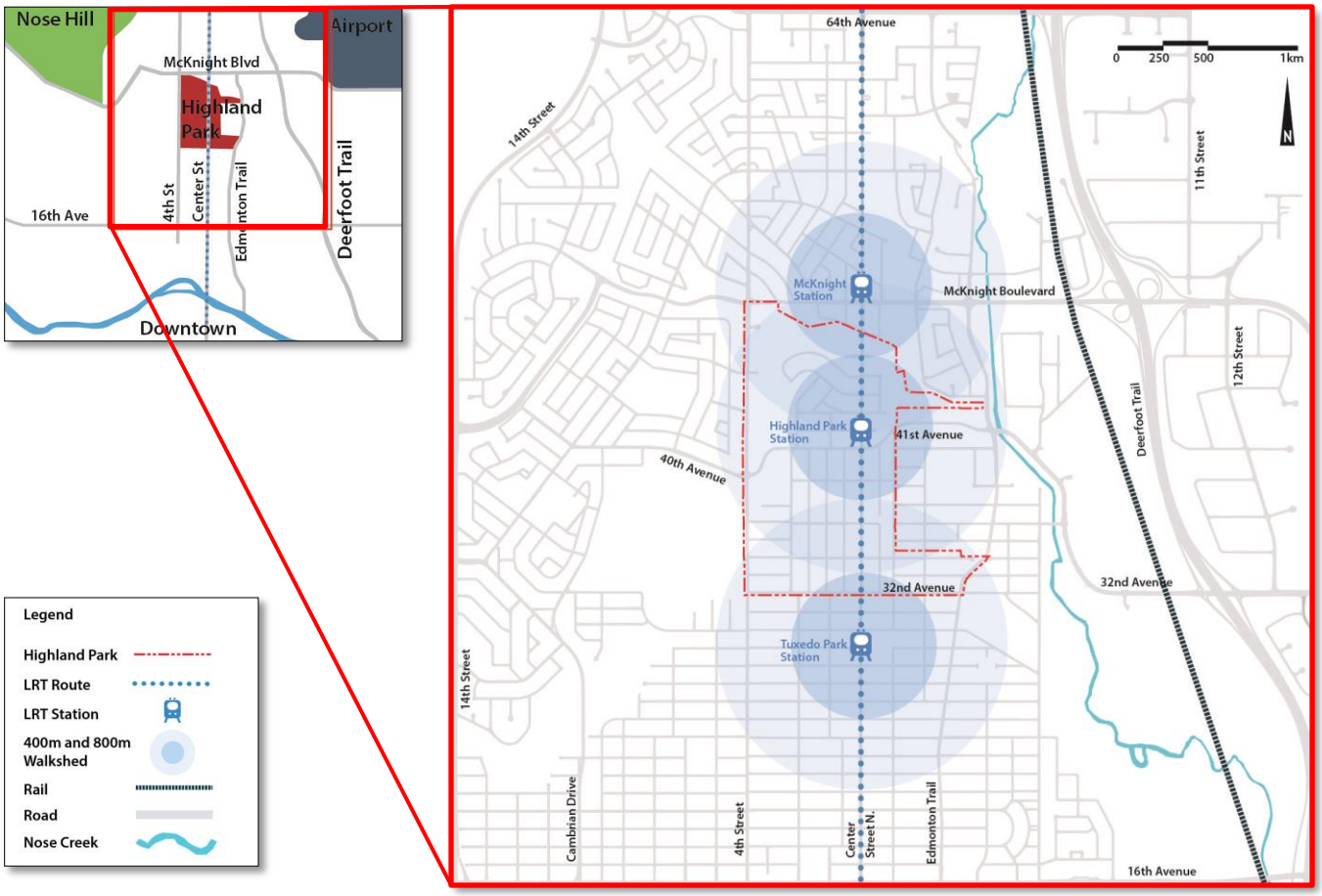


Figure 52 Centre Street Transit Route and Station Locations

The station locations need to meet the following requirements:

- Street right-of-way needs to be able to accommodate the extra width required for a station.
- Transit users will typically walk 5-10 minutes to a station; this means stations need to be placed within 600 metres from as many people as possible to encourage walking to the station as per The Calgary TOD policy [1]. This means stations need to be within 1200 metres of each other with an ideal distance between suburban stations being 800 metres as per the General Guidelines for the Design of Light Rail Transit Edmonton report.[2]

- Land uses around the stations need to be transit supportive in other words they should encourage off peak, reverse flow and mid route transit usage. Example uses include office space, street retail, food, personal, medical, leisure and childcare services, and high to medium density residential.
- Integrate with a high quality pedestrian network. Design should include wider sidewalks with street trees which provide shade in the summer but allow sun penetration in the winter. Street furniture should promote walking such as seating. No blank walls or parking lots on parcel fronts. Buildings need to be street orientated and permeable with many ground floor windows and entrances. Designs should incorporate interesting facades and building setbacks should be minimised creating a good human scale environment. These building designs can be achieved through zoning regulations
- Integrate with a bike friendly network. Design should incorporate separated bike lanes on high volume roads and bike racks need to be available close to stations preferably in an area where people will keep an eye on the bicycles throughout the day. Number of racks needs to be sufficient for the demand.
- It is preferable to place the stations at neighbourhood activity nodes with retail, services and gathering spaces. The activity node and station will assist each other in a symbiotic relationship. The high number of people passing through these areas will increase vibrancy improving economic viability and increased eyes on the street will reduce crime and vandalism.

LRT Design Policies

9.2.1 BRT/LRT ROW set to 3.5m.
9.2.2 Transit shelter design should be used to brand BRT/tram service with a common design throughout line that integrates with urban fabric. Where possible reference local history through station artwork and naming.
9.2.3 Use vandal resistant materials.
9.2.4 Stations need to implement ramps and tracks need to be flush with the road at the crossing to ensure accessibility and safety.
9.2.5 Provide at minimum one pedestrian crossing at platforms preferably perpendicular to the track.
9.2.6 Install sufficient lighting so people using pedestrian crossings are visible at all times.

Figure 53 Designated Transit Lanes On East Side Centre Street

Figure 54 South Bound Transit Station At 40th/41st Ave. Junction

Figure 55 Nottingham Express Transit
Source: TheTrams.co.uk, http://thetrams.co.uk/net/pictures/000047

Figure 56 Edinburgh Tram
Source: Photography Scotland, http://www.photography-scotland.com/2013/12/daytime-tests-for-edinburgh-trams/

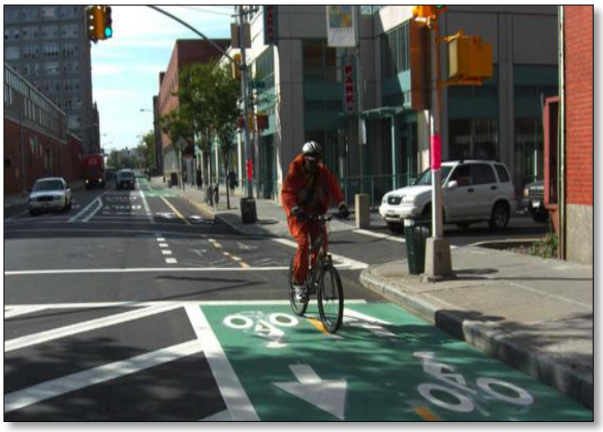
Figure 57 Edinburgh Tram Station
Source: Zytronic, http://www.zytronic.co.uk/news/blog/pct-selected-for-outdoor-self-service-kiosks-in-edinburgh-tram-stations

9.3 Bike Lanes

New separated bike lanes are recommended along the following high traffic roads: Centre Street, 40th/41st Avenue, 32nd Avenue and along the new collector road through the golf course development. The design of these separated bike lanes varies depending on the ROW available. Full street design guidelines are available in section 8.1.

To have a look of complete street, Centre Street is designed for multi modal transportation. Two-way on-street bike lane of width 2.6m is proposed at the west side of the street. The lane would be well painted with photo-illuminated powder which can be recharged with sun energy. The powder adds glow to the lane at the time of snow due to temperature variance and during night. This will make biking safer in all seasons. The level of the vehicle lane is the same as that of bike lane which can also be used at the time of car breakdown.

Two-way on-street bike lane, Dearborn Street, Chicago [5],
Source: http://archives.huduser.org/scrc/sustainability/newsletter_061113_1.html



Two-way bike lane, New York City [6]
Source: http://www.streetsblog.org/2013/12/20/new-layer-of-red-tape-from-fhwa-threatens-to-delay-nyc-bike-projects/

Figure 58 Bike Lanes

Bike Lane Design in Golf Course:

1. Every sub subdivision in the golf course site should have access to the bike lanes along the golf course main road.
2. Bike lanes in the golf course should connect to the Nose Hill, Nose Creek and Confederation Park.
3. Bike lanes should be on one side of the golf course main road with two directions and at least 1.3m width per direction.
4. Bike lanes should have at least 0.8 meter buffer from the vehicle lanes.

Separated Bike Lane Design Policies

9.3.1 Where the street ROW allows the separation will be a 2 metre treed buffer. Along narrower sections the buffer will be a half metre on street painted separator.
9.3.2These separated bike lanes will be two way and 1.3 metres wide.

9.4 Trails and Sidewalks

The Nose Hill, Confederation Park and Nose Creek trail networks should be connected through the golf course development. The recreational green space at 36 Av. intersection is acting as a pedestrian-oriented connector. It is a pathway with variety of amenities for all ages and seasons. This special pathway will remove the topography barrier and the existing disconnection within the community. It encourages people with disability issues and the seniors to utilize the space fully by providing the ramp of gentle slope. Also, another pathway outside the recreational space is provided for connecting the 36 Av NE street to 1st street NE directly. This pathway would be a combination of ramp and stairs with some piece of public art to be contributed by the kids of the community.

Koi fish stairs, Korea [7]
Source:
https://www.pinterest.com/bfarrington/street-artpublic-art/

Laneway art Sydney [8]
Source:
http://aajpress.wordpress.com/2011/09/04/art-about-sydney-23-september-31-january-2012/

Hungary [9]
Source:
http://participationexamples.wordpress.com/

Figure 59 Stairs

The public art on stairs will create curiosity among kids to walk on it. It will make them active and healthy. Colour palette on stairs can also educate them about colors. It also gives a sense of place of belonging and ownership of public space. The public art helps in social participation. The art shown in stairs in Hungary has a theme "Dreamed profession of future of local kids".

Trail Design in Golf Course:

1. Every sub subdivision in the golf course site should have in front of each building with a width of at least 1.5 meter.
2. The trail system should connect to the main road, two open spaces and all plazas.

Sidewalk & Pathway Policies

9.4.1 Sidewalks in high volume pedestrian areas should be increased in width to a minimum 1.5 metres but ideally where ROW allows to 1.7 metres.
9.4.2 Street furniture including seating should be incorporated along neighbourhood activity nodes and corridors.
9.4.3 Street lighting should be incorporated at human scale.

Open Space Plan, City of Calgary (page 22) [10]
Local pathways to be connected with key destination of local community such as commercial nodes, schools etc.
Integration of pathways for seamless recreational activities and mode of transportation.

9.5 References

[1] Transit Oriented Development Policy Guidelines, The City of Calgary Land Use Planning & Policy, 2005
[2] General Guidelines for the Design of Light Rail Transit Facilities in Edmonton, Robert R Clark, Edmonton, 1984, http://www.trolleycoalition.org/pdf/lrtreport.pdf
[3] Stops, Spacing, Location and Design, U.S. Department of Transportation Federal Transit Administration, http://www.fta.dot.gov/12351_4361.html
[4] Edinburgh Tram Design Manual, 2005 http://www.docstoc.com/docs/39546138/EDINBURGH-TRAM-DESIGN-MANUAL
[5] Chicago Department of Transportation, "Sustainable Communities e-News", Vol. 02, issue 03, June 2013
[6] STREETBLOG NYC, Dec 20, 2013, http://www.streetsblog.org/2013/12/20/new-layer-of-red-tape-from-fhwa-threatens-to-delay-nyc-bike-projects/
[7] Street Art, Public Art, https://www.pinterest.com/bfarrington/street-artpublic-art/
[8] AAJ Press 2011, http://aajpress.wordpress.com/2011/09/04/art-about-sydney-23-september-31-january-2012/
[9] Public Art & Participation 2013, http://participationexamples.wordpress.com/
[10] Open Space Plan, City of Calgary 2003

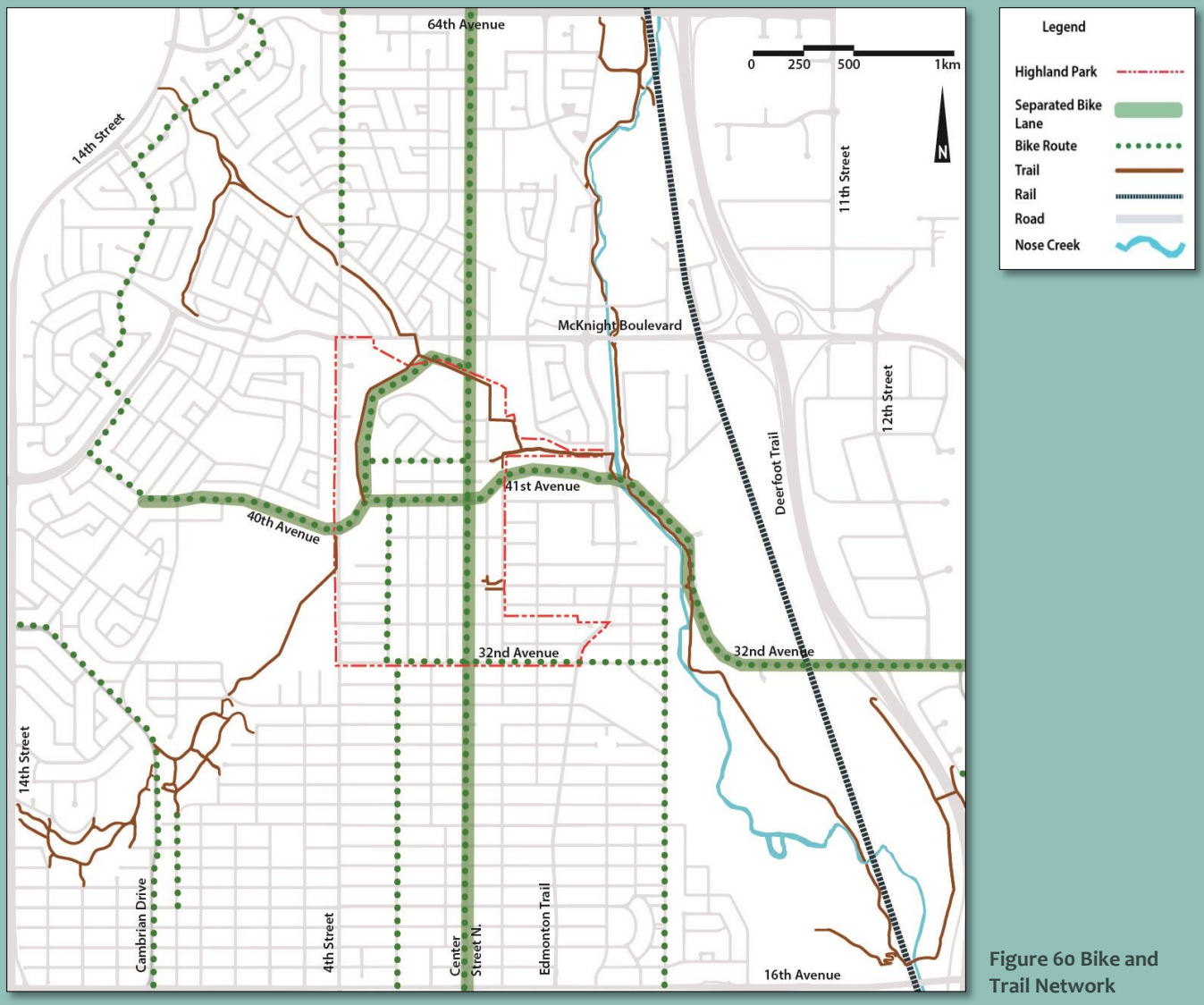


Figure 60 Bike and Trail Network

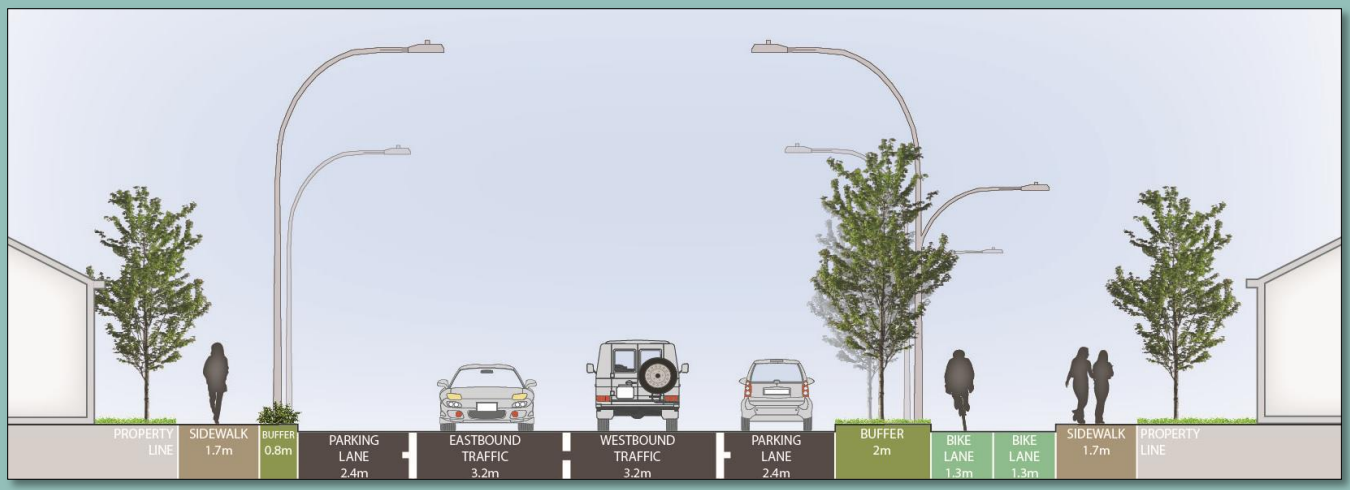


Figure 61 40th Avenue Bike Lane and Sidewalk

10. Golf Course Site

10.1 Site Analysis

The golf course site is located in the north of the community, between Centre Street and 4th street. The golf course site is currently zoned as S-R (Special Purpose-Recreation) and bought by a developer. On the other side of the Centre Street, opposite of the Golf Couse is a lot zoned as S-SPR (Special Purpose-School, Park and Community Reserve). Based on the golf course site map (Figure 61), we can see that there are several large utility lots in the middle of the site. They largely affect the future land use planning of the site. It needs some money to remove these utility lots and re-locate them, which largely depends on the decisions of the developer. However, if the utility lots could be removed, more units, higher density, more reasonable land use subdivisions and more public spaces will be achieved. Based on the 0.5 meter contour map we can see that in the middle of the site the land is flat and on the edges of the site the land is very steep. The utility lots and steep site edges are the most significant challenges of the future development.

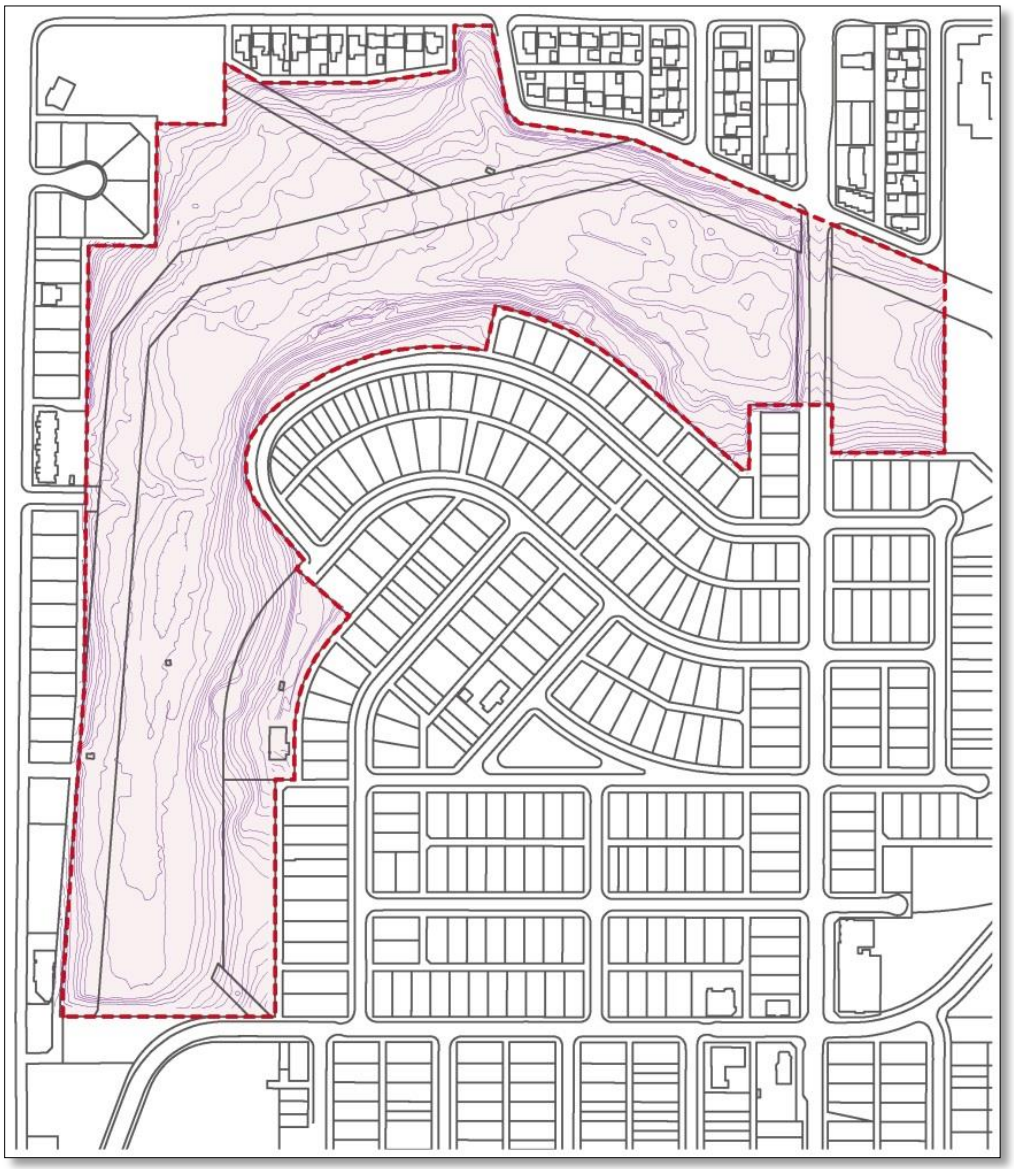


Figure 62 Golf Course Site Map

10.2 Land-Use Plan-1

Based on the above site analysis, I proposed two different land uses with different assumptions. The first one (Figure 62 Land-Use Plan-1) is made based on the assumption that the developer will remove the utility lots. 9.5% of the area will be kept as MR and the extra 0.5% MR would be requested in cash from the golf course developer to purchase the empty lots at the community heart. Overall we tried to put high density developments along the steep edges, because they are medium-rise apartments with 3-4 floors that could be built like a terrace. This plan has two R-C2 subdivisions for cottage housing, three MC-1 subdivisions for townhouses, four MC-2 subdivisions for medium-rise apartments, two S-SPR zonings for parks, one M-X1 zoning for a commercial/residential development and one C-N2 zoning for commercial uses. Please see the below table (table-1) for detailed housing data.

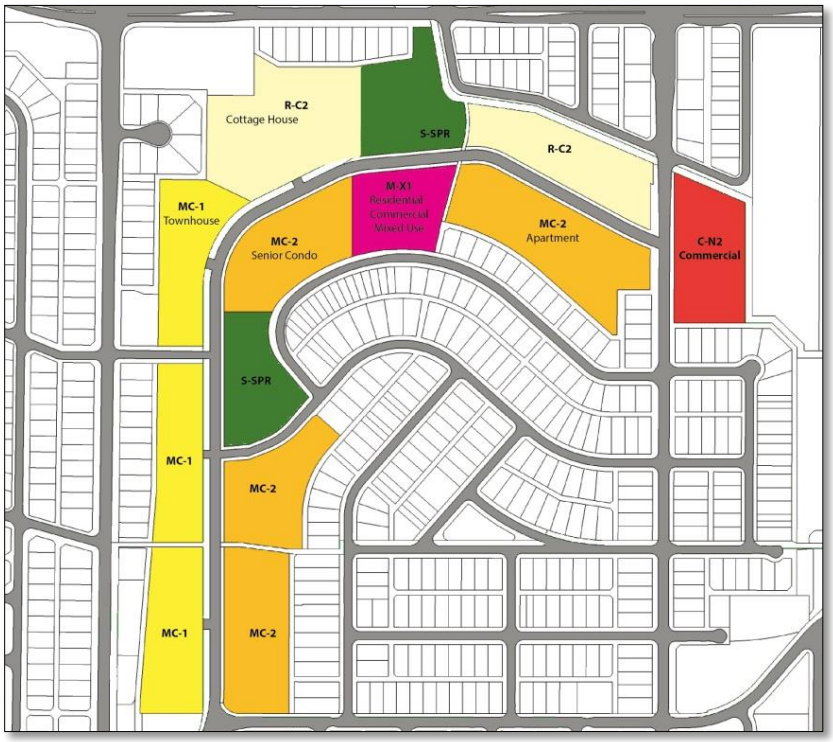


Figure 63 Land Use Plan-1

Plan-1	Area(hectare)	Units Per Hectare	Units
MC-2 (Apartment)	5.899	150	885
MC-1 (Townhouse)	3.575	50	179
R-C2 (Cottage/Single)	3.965	30	119
M-X1 (Mixed use)	1.275	65	83
Total	14.714	N/A	1266

Table -1

10.3 Land-Use Plan-2 (Optional)

The second one (Figure 63 Land-Use Plan-2) is made based on the assumption that the developer will not remove the utility lots. 9.5% of the area will be kept as MR and the extra 0.5% MR would be requested in cash from the golf course developer to purchase the empty lots at the community heart. Overall we tried to put high density developments along the steep edges, because they are medium-rise apartments with 3-4 floors that could be built like a terrace. This plan has three R-C2 subdivisions for cottage housing, three MC-1 subdivisions for townhouses, four MC-2 subdivisions for medium-rise apartments, three S-SPR zonings for parks, one M-X1 zoning for a commercial/residential development and one C-N2 zoning for commercial uses. Please see the below table (table-2) for detailed housing data. As we can see from the tables and maps, compare to the plan one this plan has much smaller and separated open spaces and less units therefore we consider this is the less desirable plan.

Figure 64 Land Use Plan-3

Plan-2	Area(hectare)	Units Per Hectare	Units
MC-2 (Apartment)	4.003	150	600
MC-1 (Townhouse)	3.325	50	166
R-C2 (Cottage/Single)	3.750	30	112
M-X1 (Mixed use)	1.074	65	70
Total	12.152	N/A	948

Table-2

10.4 Housing Plan

Based on the housing plan map (Figure 64) which is made based on the first land use plan, there are two cottage house subdivisions, three townhouse subdivisions and four medium-rise apartments. Cottages are small houses for senior people or small families. There are two types of townhouses: one subdivision is more expensive with duplex townhouses, drive ways and small gardens; two subdivisions are more affordable without driveways for young families. There are three types of medium-rise apartments: two subdivisions are affordable housing with small size units with less bedroom numbers; one subdivision is built for senior housing and another subdivision is built with high quality with more amenities and is built as luxury apartments.

Figure 65

10.5 Transportation Plan

The transportation plan for the golf course site mainly has two parts: the bike trail plan and the vehicle access plan. As we can see from the transportation and open space maps (Figure 65), there is a main road (Figure 66) across the whole site. The main road connects to 4th street and Centre Street. The bike trail system connects to the two open spaces, Nose Hill, Nose Creek and Confederation Park.

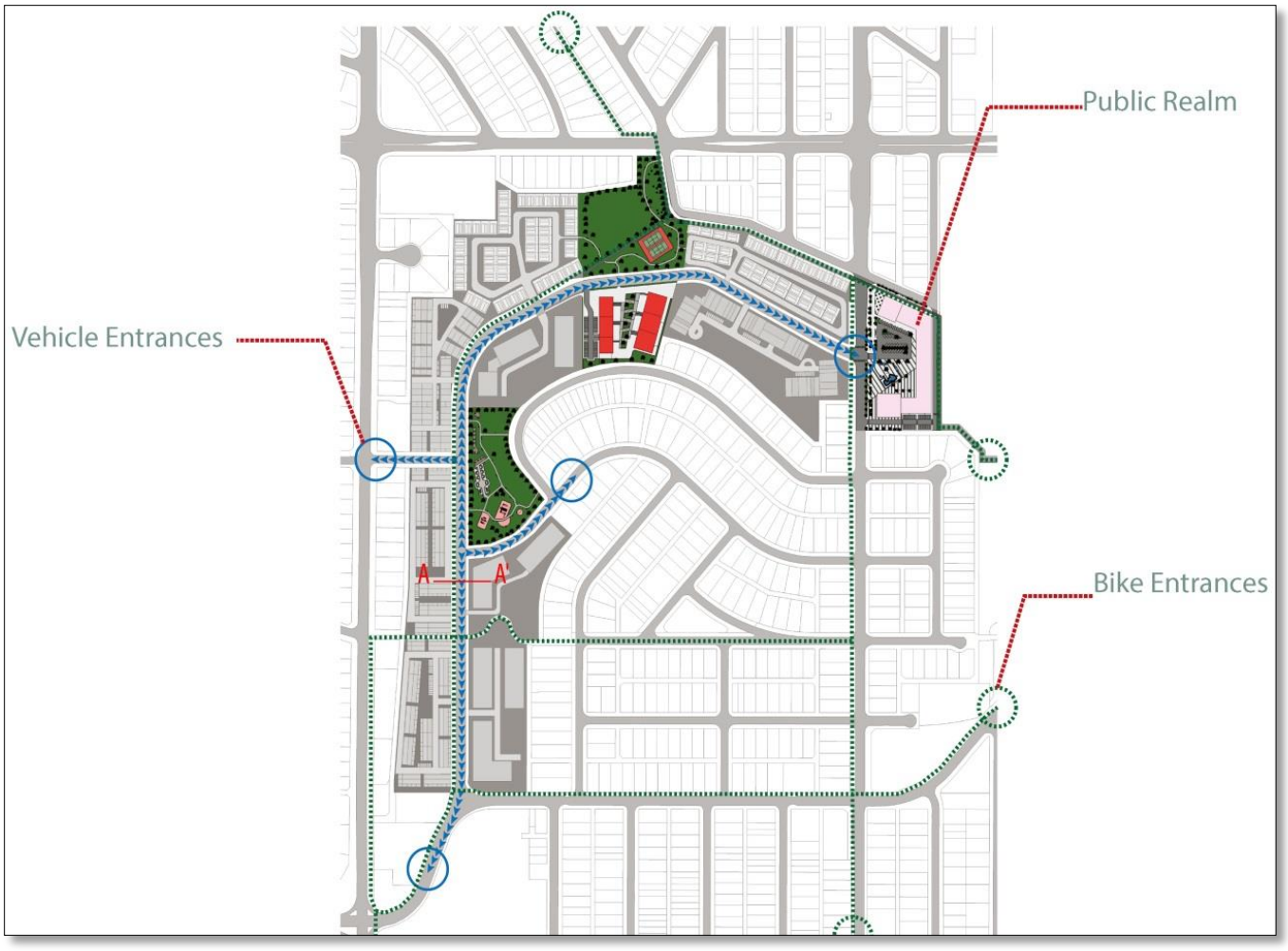


Figure 66

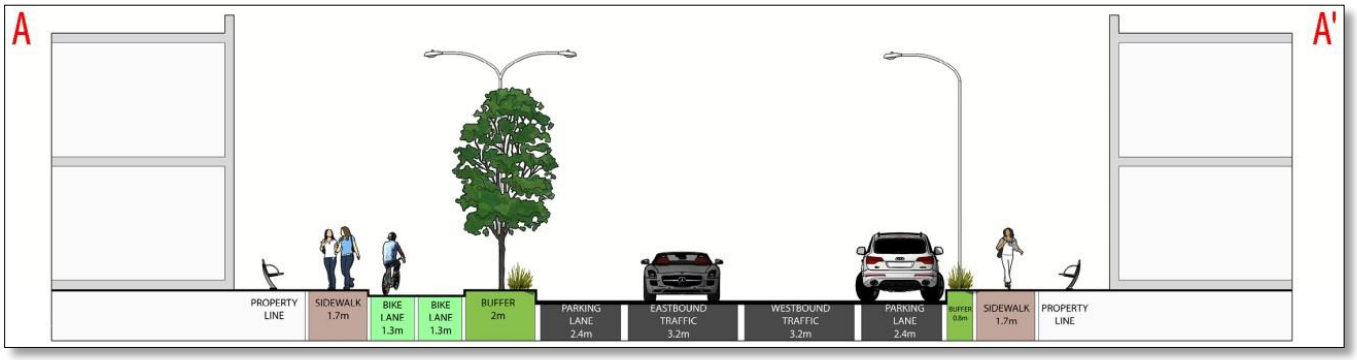


Figure 67

10.6 Public Realm

In terms of public realm, there are totally two parks and two plazas in the golf course site with different locations and functions. (Figure 65)

10.6.1 Park-A

The first park (Figure 67 Park-A) is located in the north of the site. It has a big open space (Figure 68 Open Space) for a variety of sports, and picnic area (Figure 69 Picnic Area) and tennis court (Figure 70 Tennis Court). There is a bike trail across this park, so cyclists could have a rest in the park. There are also shaded sidewalks (Figure 71 Shaded Sidewalks) with benches and lights, which provide a nice walking area for seniors.

Figure 68 Park-A

Figure 69 Open Space

Figure 70Picnic Area

Figure 71 Tennis Court

Figure 72 Shaded Sidewalks

10.6.2 Park-B

The second park (Figure 72 Park-B) is located in the center of the golf course with a steep slope in the back. It has a large community garden (Figure 73 Community Garden) where residents can plant various vegetation, flowers and trees. There is also a site in the center of the garden with benches for lingering. There are many playground facilities (Figure 74 Playgrounds). One is for very young kids. One is for older children. There is a basketball site for youth and a

swing. For the steep slope, I put tress as the background and try to turn it to a nice shaded area for reading and sitting (Figure 75 Reading Area).

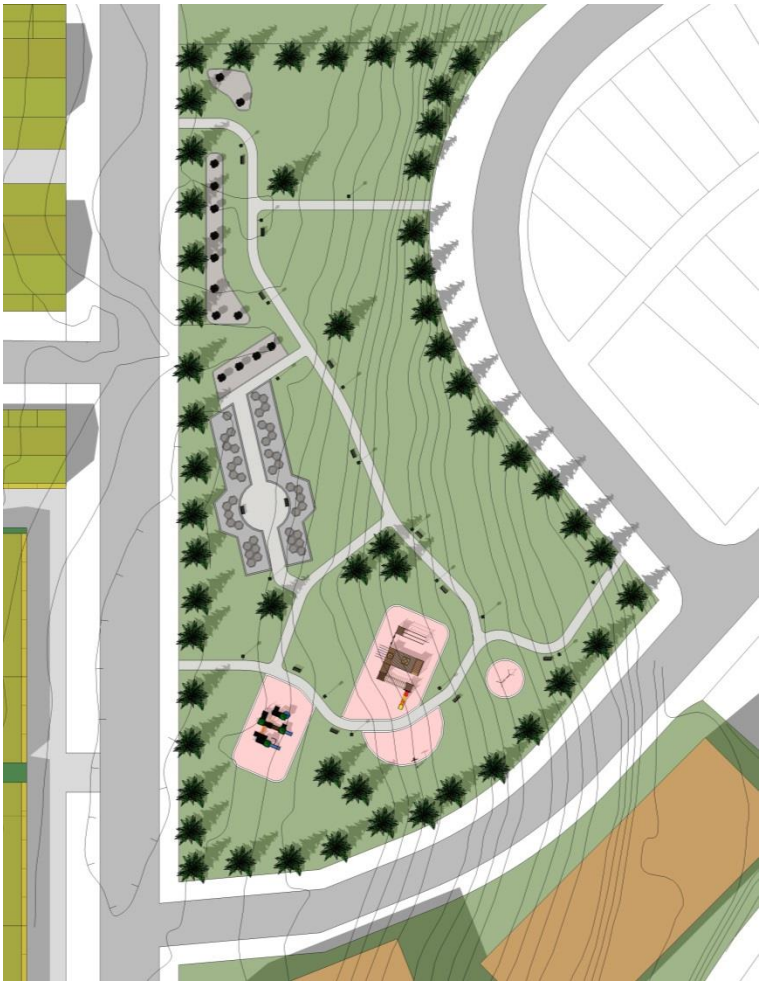


Figure 73 Park-B

Figure 74 Community Garden

Figure 75 Playgrounds

Figure 76 Reading Area

10.6.3 Plaza-A

The plaza (Figure 76 Plaza-A) is located in front of the tennis park. They are connected by a crosswalk. The two buildings in the sites have commercial at grade and residential above. There are underground parking lots for condo residents, at grade parking and along street parking lots for shoppers. For addressing the slope of the site, I designed this plaza with green spaces in the middle, bike lanes for cyclists, stairs for pedestrians and ramps across green spaces for people with disabilities (Figure 77).

Figure 77 Plaza-A

Figure 78

10.6.4 Plaza-B

The second plaza (Figure 78 Park-B) is located along the Centre Street. The building is for commercial purpose with shops, restaurant, Café and so on. The plaza has nice shaded sidewalks, siting area and several bike racks (Figure 79 Bike Racks) for encouraging people to ride bikes. The key element of this site is the skate plaza (Figure 80 Skate Plaza), which will bring a great exercises site for residents and more business for the shops.

Figure 79 Plaza-B

Figure 80 Bike Racks

Figure 81 Skate Plaza

11. Community Heart Site

The Vision session with the community identified that the neighbourhood was lacking informal meeting spaces in both public and private realm. One of our visions for Highland Park is to build on the social capital of the community which can be assisted by creating opportunities for residents to gather and socialise. With this in mind we developed a meeting space concept which would address these desires. To help this space succeed we located it in an already active node close to the Centre Street and 40th/41st Avenue intersection. This junction has some retail, food services, office space and a couple of churches. In addition this junction has a very active transit stop and it is geographically located in the center of the community. Next to the Centre Street Church there are a couple of vacant parcels which currently do not have any development permit. On one side of the parcels there are some houses which are in very poor condition; on the other side of the parcels there is a cul-de-sac which is municipal owned land. This cul-de-sac currently provides access to the Centre Street Church parking lots however these parking lots have additional access via 41st Avenue. There is also a storm water utility right of way running under the cul-de-sac.

Figure 82 Proposed Site For Community Heart

Concept 1

Concept 2

Figure 83 Rezoning For Concept Two

Two concepts were developed, both built around a public plaza. The City could request cash in lieu for 0.5% of the MR from the expected golf course redevelopment. This cash could be used to purchase the empty lots. Once the lots are obtained The City would develop a large plaza space on the cul-de-sac and the two empty lots beside the church. One of the lots is zoned direct control; the city could build a 3 story mixed use building on this land with ground floor retail and second and third floors residential. This could be an opportunity for The City to construct affordable housing units. Once this building is occupied the new residents will help to support any future retail which should stimulate the further mixed use developments in the plaza vicinity.

The first concept would see the rezoning of the four residential parcels north of the empty lots to mixed use M-X2. This zoning designation sets a Floor Area Ratio (FAR) maximum of 3 which equates to 3 stories for the parcel sizes. The second concept would see the rezoning of the four residential parcels north of the empty lots to mixed use M-H1. This zoning designation sets a Floor Area Ratio (FAR) maximum of 4, when the four parcels are merged into two the FAR equates to 4 stories, the fourth story requiring setbacks. This concept introduces an additional building on the south side of the plaza. This building would be zoned mixed use M-X2 and would be 2 stories so as to keep the shadows on the plaza to a minimum. Although the extra building will increase shadows it has some added benefits; it will increase the population density in the area which will help support the ground floor commercial as well as adding an additional active edge to the public space increasing its desirability.

Zoning Designation	**Regulation**			
	Building Height	Floor Area Ratio	Setbacks	Density
M-X2 Medium Profile Support Districts	16m maximum Above 10m requires 3m setback from street	3 maximum	Front setback: 0 for street orientated multi residential buildings Rear setback: 1.2m Side setback: 0	60units/ha. minimum
M-H1 High Density Low Rise	26m maximum Above 10m requires 4m setback from street and 6m setback from rear lanes	4 maximum	Front setback: 0 for street orientated multi residential buildings Rear: 0 Side: 0	150units/ha. minimum

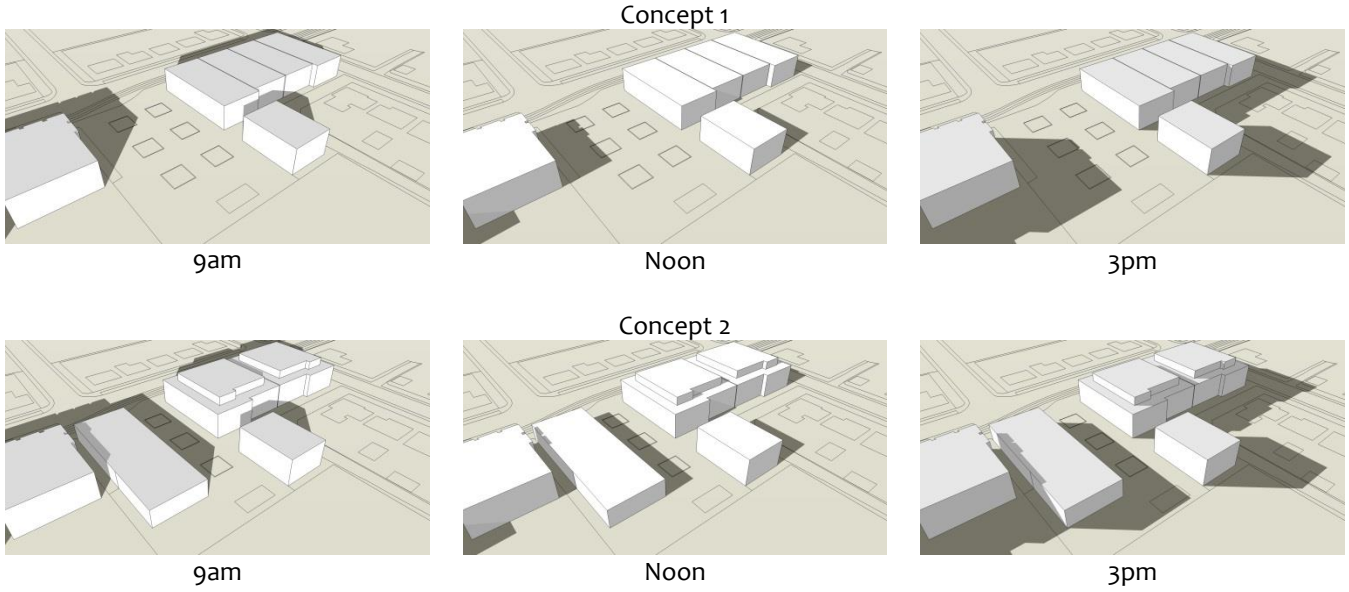


Figure 84 Community Heart Concept Shadow Studies On January 21st

The zoning designations selected are for mixed use buildings located at transit corridors and nodes intended for outdoor space and social interaction. This fits perfectly with the planned use for this space which would be retail, and restaurants on the ground floor with residential above. The shadow studies for both concepts in winter on January 21st, is acceptable for a public space.

Rose Lawn Square: The plaza, which will provide a public social gathering space, will be named after the historical district that it is located in. A stage could be situated at the rear of the plaza; this location will be in the sun most of the day most of the year and it also looks out onto the Nose Creek valley view. Plenty of seating should be located in this area of the plaza, they should be positioned so as to look towards the stage and leverage the great views. The City building could rent out café space on the ground floor to provide a private meeting space year round and a patio café in the summer. Kids zones could be integrated into the plaza to provide a space to play for young kids during events. Artwork based on the history of the district will be incorporated in the public realm. The bike network will link to this activity node but to encourage bike usage racks should be provided. The plaza will incorporate many deciduous trees to provide shade in the summer but allow sun penetration in the winter. Large planters will provide additional informal locations for people to sit. The pedestrian sidewalks near the plaza will be 1.8metres with an additional 2metre zone for street trees. The east parcel will be converted into a community terraced vegetable garden with a seating area for residents to look out at the view. A meandering pathway will wind between the terraced beds providing an alternative route between the industrial area park and the rest of Highland Park.

Historical Artwork, The Hill on Wellington Street Ottawa, Ellen Michelson: http://ellenmichelson.ca/page/3/

Bike Racks, Gresham CFTA Plaza, Greenworks: http://greenworkspc.com/2009/06/

Stage,City Square, City of Regina: http://www.regina.ca/residents/parks/city-square/

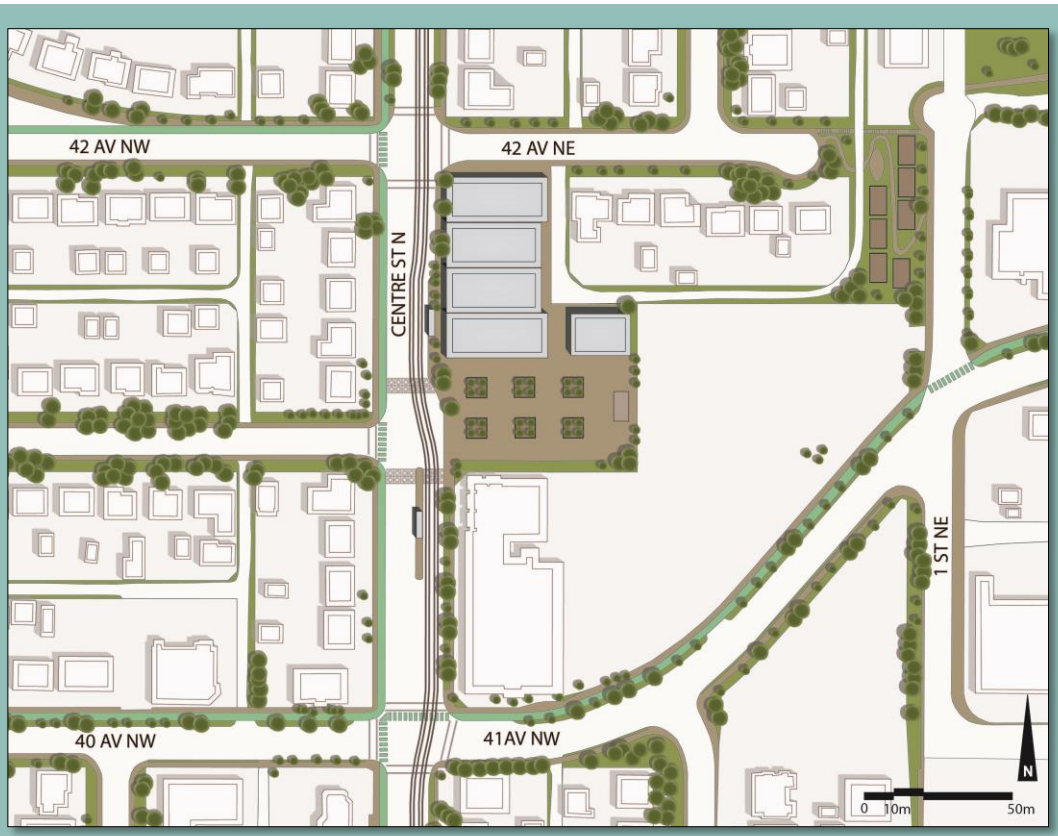
Street Café, Horsleydown Square London, BeenThere-DoneThat: http://www.beenthere-donethat.org.uk/london/london-towerhill059big.html

Kids Zones, Shared space street Amsterdam, Joel Mann: https://www.flickr.com/photos/joelmann/755255006/

Kobe Terrace, Seattle Parks and Recreation: http://www.seattle.gov/parks/park_detail.asp?ID=3915

Figure 85 Community Heart Precedents

Concept 1



Concept 2

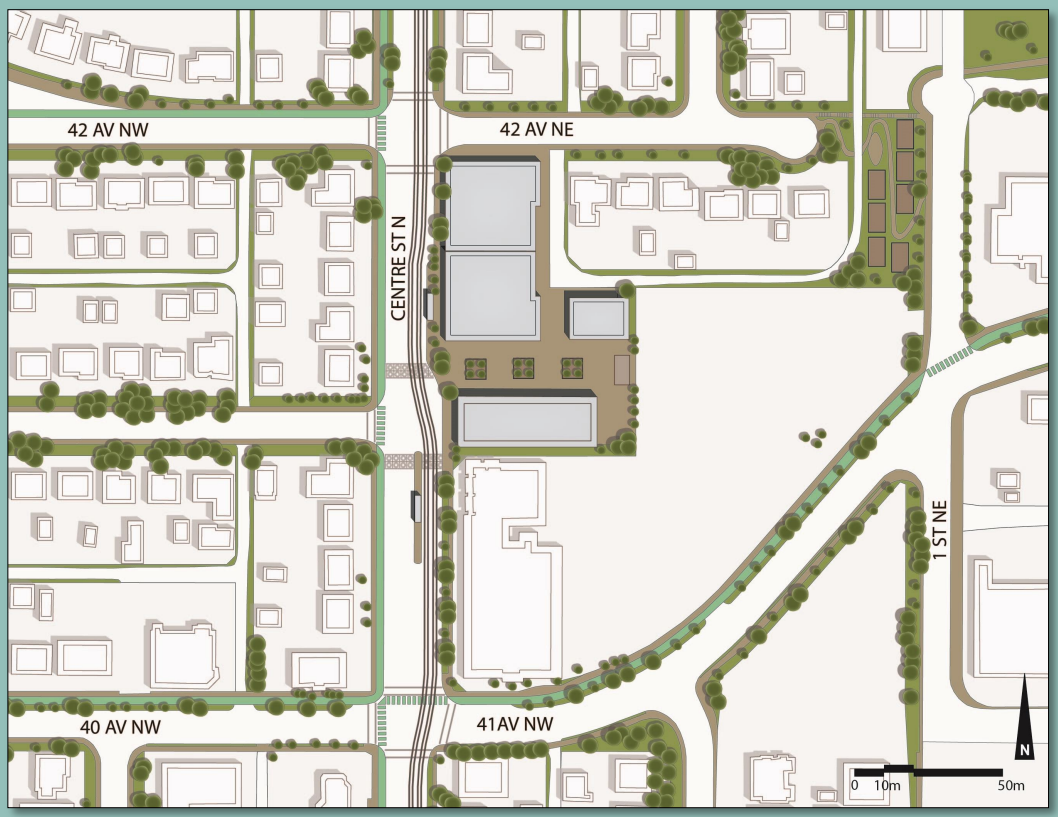


Figure 86 Community Heart Public Realm Master Plans (Larger versions available in Appendix B)

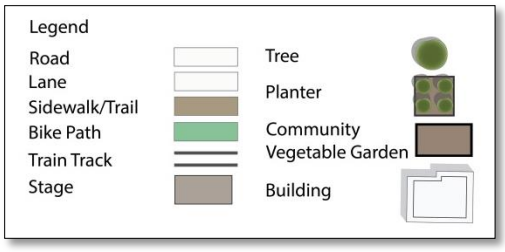
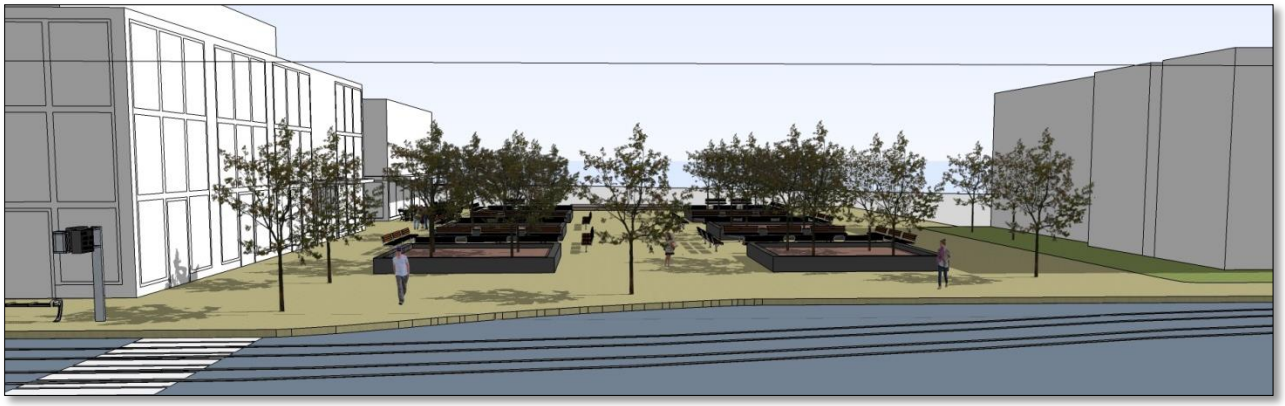


Figure 86 Legend

Concept 1



Concept 2

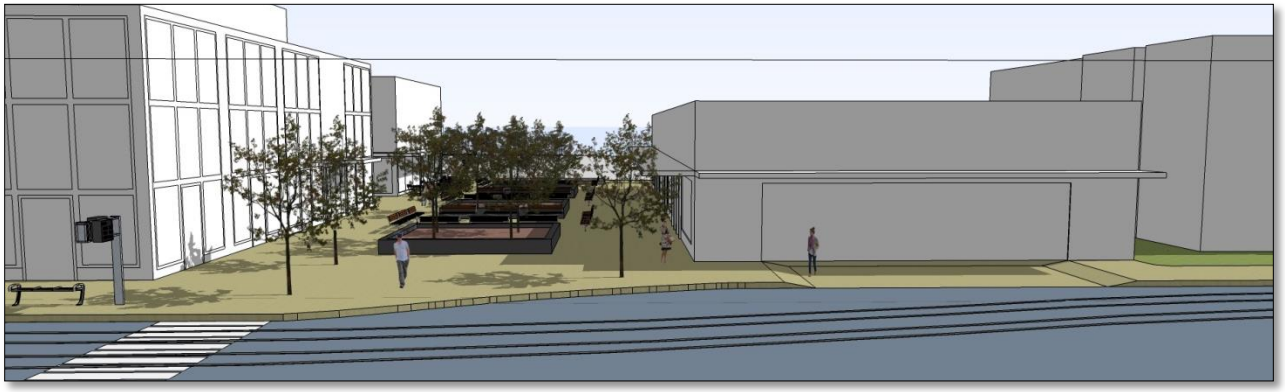


Figure 87 Views Of Rose Lawn Square

12. 40th/41st Avenue Intersection

12.1 Introduction

The existing buildings at the 40th/41st Avenue intersection have underutilized M-C1 zoning. The proposed design encourages the mixed used densification by using proper zoning bylaws application. More variation in programming has been proposed by giving an opportunity of various jobs such as day care facilities, home occupation, live work units, gymnasium, library, offices, bed breakfast etc.

12.2 Objectives

1. Proper utilization of existing zoning
2. Proposition of change of zoning from R-C2 to M-C1 for cluster formation
3. Use of back alley for mobility
4. Use of natural topography for reducing the massing impact
5. Reduction of the north westerly wind by medium density development which will act as barriers against the wind.

MDP, 2009, city of Calgary
2.2.5 Encouraging infill and redevelopment with increase in mixed use type of housing
Providing higher density next to urban corridors and area served by public transit
2.3 Creating great communities:
New development matching with existing community heritage and character
Providing parks, recreational activities with quality public realm
A linear linkage to connect the community
2.4 Creating urban design elements
2.4.1 Creating beautiful meaningful spaces between buildings by forming clusters
2.4.2 Built form:
Encouraging mid-rise density to achieve the desired intensification
Considering of shadow impact on adjacent existing residential buildings and open spaces
2.4 Beautifying the new development by preserving and enhancing scenic natural beauty, integrating open green space with the developed buildings, direct pedestrian entry and screening parking lots, promoting community safety under CPTED (crime prevention through environmental Design), and designing buildings at human scale

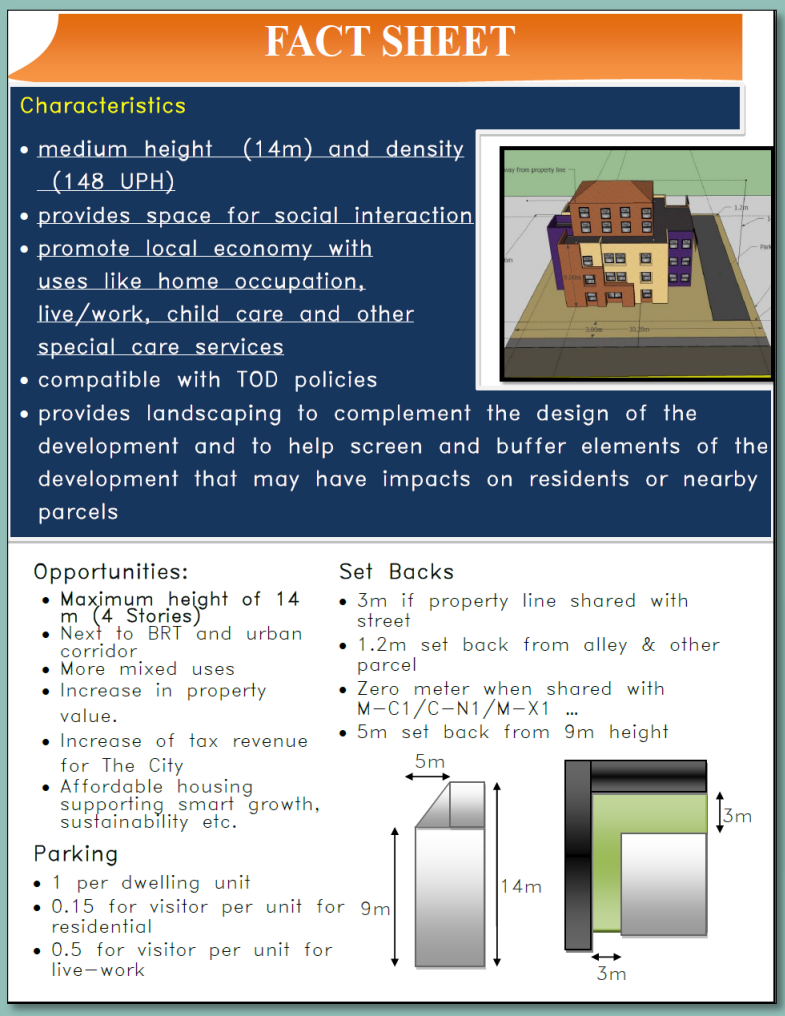
TOD Calgary
6.5 Using glass or any architectural elements to provide visual interest to pedestrians
8.1 Reducing car oriented development, parking spaces by developing high density near to TOD station areas
8.2 Separating Parking lot at rear side of development from pedestrian routes

12.3 Design Elements (Refer Land Use section for more detail)

1. The built environment is designed to weave the soft landscape with the hard landscape architecture.
2. Pocket parks in between building are special places which have daily impact on the quality of people's life
3. Entrances to these clusters from different directions increase the legibility and accessibility
4. The setbacks from the top floor of the buildings help in maintaining the human scale and also give the feeling of enclosure
5. The short block sizes provides safety and comfort as per CPTED
6. Natural land form in the form of topography is maintained in redevelopment
7. The clusters are surrounding by green space to promote social capital.

These open spaces are well connected with natural surveillance, all seasonal activities and aesthetically illuminated to encourage people to visit during night time. The following figures show the existing land use and the proposed cluster formation on 40/41 Avenue NW intersection.

Figure 88 Existing and the proposed development along 40/41 Av intersection



Fact Sheet of M-C1 zoning

3D model of the single lot 15.24m x 30m

Figure 89 Fact Sheet MC-1

The following figure shows a single lot of 15 x 38m size going for 3-4 stories multi residential development under M-C1 zoning.

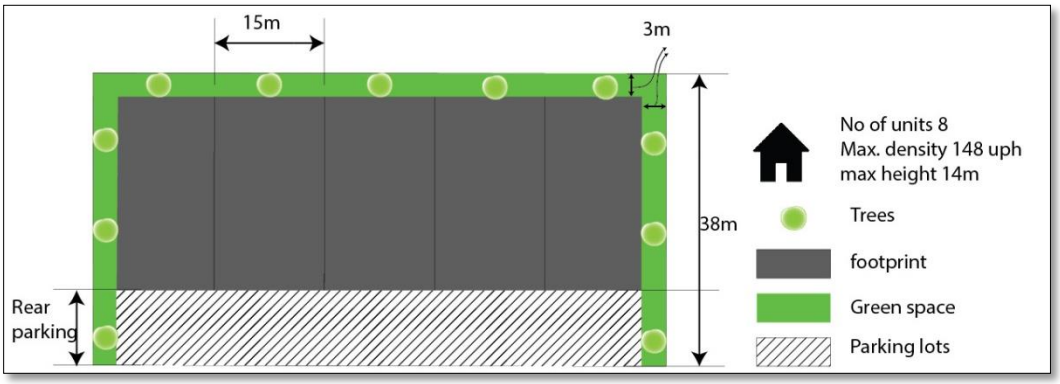


Figure 90 M-C1 Lots

The following map shows the cluster formation for intensification with certain characteristics.

1. Mixed use oriented development from low to medium density
2. Aggregation of parcels to blocks for multi residential diversity
3. Creation of green spaces with secured environment for kids to play
4. Compatible intensification with the character of the developed community with respect to scale, height & architectural features
5. Use of back alley for car oriented mobility
6. A green space in the form of inserted block is creating a pocket garden for recreational activities
7. Small block size for crime prevention
8. Buffering with trees for privacy
9. Pedestrian entry from Centre Street
10. Outdoor restaurant for creation of good public realm
11. Single lot development with rear parking lots and entry from back alley
12. Green space next to street for vibrancy and active street edges, along with parking at inner core with central courtyard for public art
13. Different architectural form of cluster design for bringing excitement in the community and attracting young families to live in.
14. Orientation of building to enjoy maximum Sun exposure time
15. Adding of alley space into the cluster formation by forming T-alley for neighbouring buildings

Figure 91 Cluster Formations for Intensification

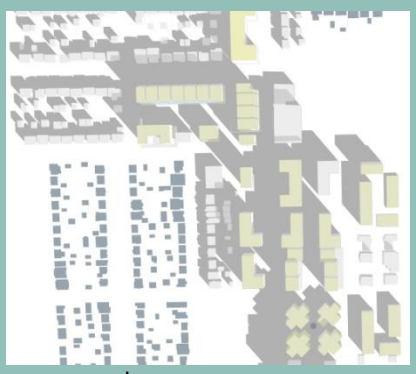
Shadow Analysis

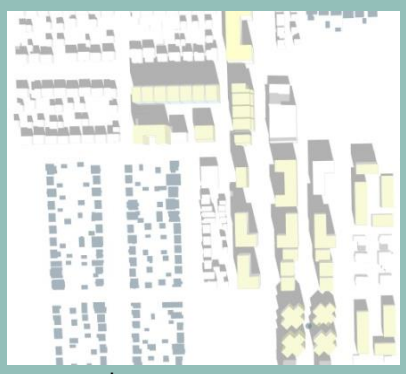
MDP, 2009, City of Calgary
2.2.1 Reduction of impact of shadow on green open spaces, streets and existing buildings

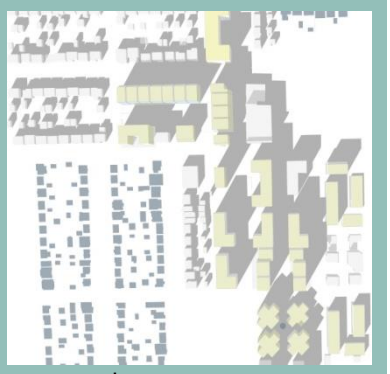
TOD Guidelines
5.2 Proper transition of medium to low density development

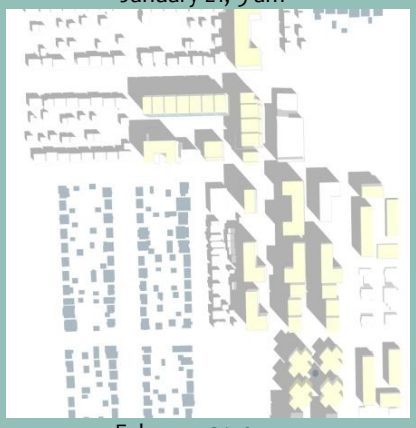
Birds Friendly Urban Design Guidelines (City of Calgary)
5.3 Designing building facade based on bird friendliness
5.5 Avoiding for the birds confusion by clearly defined edges of buildings and courtyards
5.11 Reducing site and building light glare and pollution

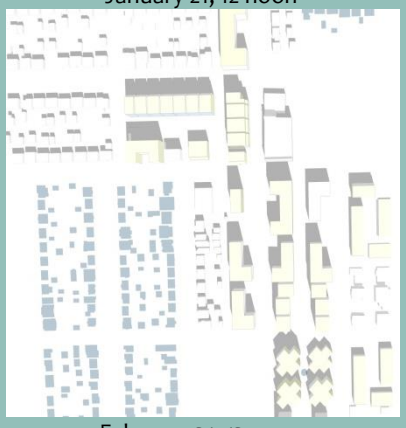
The following figures show the shadow analysis of the cluster during the month of January and February at 9am, 12 noon and 3pm.


January 21, 9 am


January 21, 12 noon


January 21, 3pm


February 21, 9 am


February 21, 12 noon

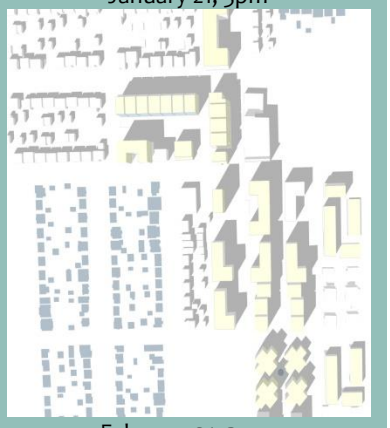

February 21, 3 pm

Figure 92 Shadow Analysis

Based on above figures, during winter month of January at 3pm, the streets are under the impact of shadow from the neighbouring buildings and are still free from the shadow zone. Similarly at 9 am, the streets as well as the neighbouring buildings are under shadow zone. The Sun exposure is mainly at noon where it can be enjoyed properly on the streets as well as on open green pocket parks.

13. 41st Avenue Industrial Site

41st Avenue is a busy road running through the industrial area. It provides good linkage between Highland Park and the Nose Creek trail system and employment areas in Calgary's north east. This street lacks sidewalks, safe bike infrastructure, human scale and it has a very poor public realm. The industry on the north side of 41st Avenue acts as a barrier to the park behind it and the one road which does provide access to the park, 1st Street, could be more human friendly.

Two concepts were developed, but in both cases wide pedestrian sidewalks are incorporated along with side by side bike lanes which have a 2metre tree buffer from the road. A narrower road width and street parking will help to slow traffic down on this busy road. The park space is improved with fencing where required, additional soft landscaping and trees to buffer the industrial activity as per policies 4.4.2, 4.4.3 and 4.4.4.

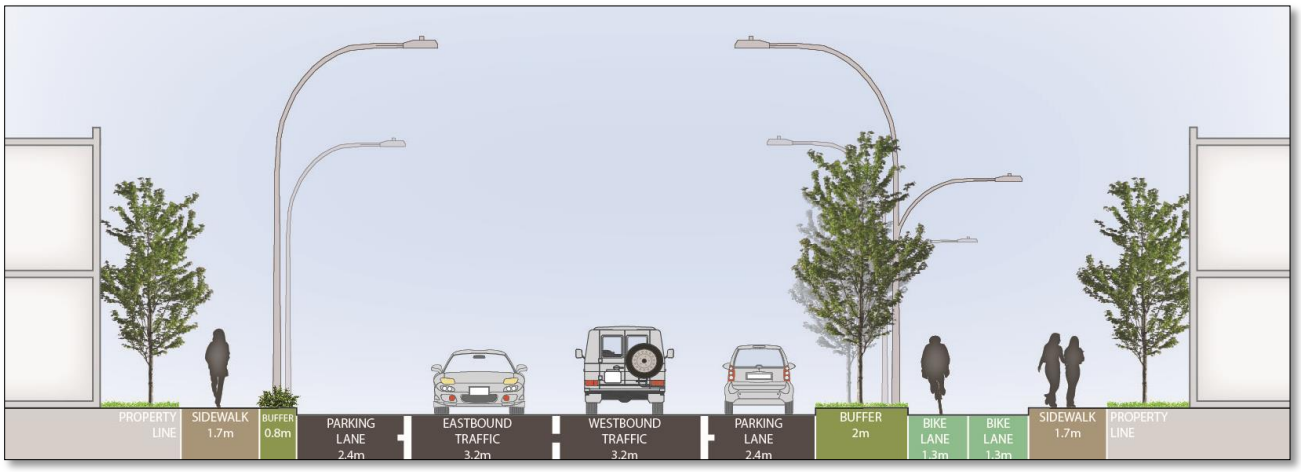


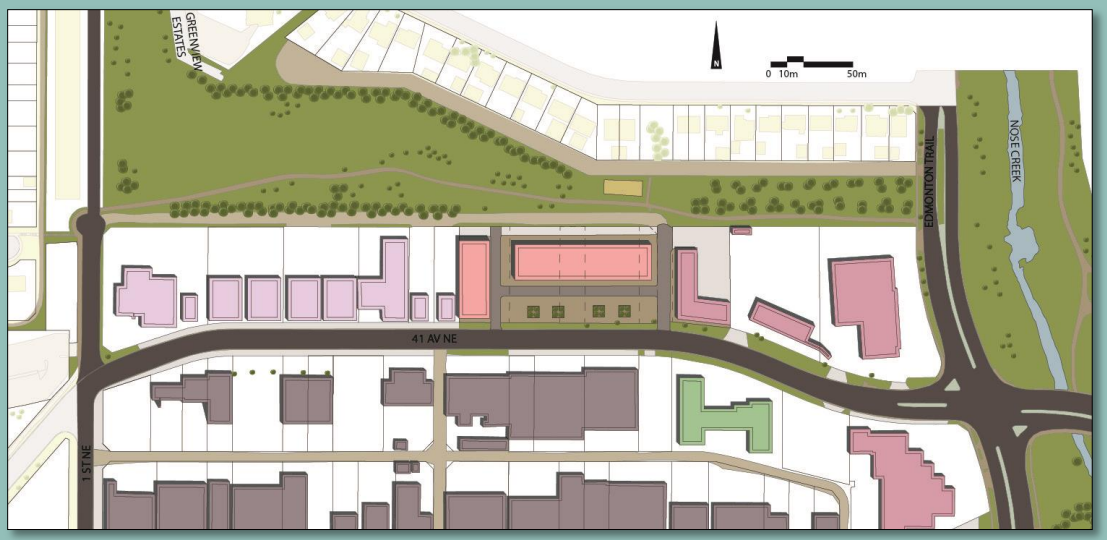
Figure 93 41st Avenue Street Cross Section

The first concept recommends that over time the zoning designation on the north of 41st Street change from industrial redevelopment to industrial edge. Industrial edge removes the medium industrial activity which industrial redevelopment allows. This designation also requires slightly stricter screening. The second concept takes the rezoning a little further, recommending that the community approve any developer application to rezone to a mixed use designation. In this concept commercial community district was selected because it allows livework, art and film studio, restaurant, outdoor café and fitness center uses etc. All of these activities could fit together with industrial edge and would help to enhance the street activity for more hours in the day. This zoning designation sets FAR to 1 which easily provides 3 stories. The second concept also introduces the idea of providing a public space. This space could be used by the industrial area employees particularly at lunch time. It is also hoped that the improvements to the street will encourage more Highland Park residents to use the street to pass through with the likelihood of stopping along the way to stay a while in the public space. The livework units would require street access so incorporating woonerf streets would help to deliver this while ensuring pedestrian safety around the plaza as these streets have a traffic slowing effect.

The trail network will complete the missing linkages by adding a cross walk over Edmonton Trail with a new path to the Nose Creek system, and by adding a second path leading north west to the golf course redevelopment trail system. 1st Street will be improved with the addition of good street lights and street trees.

Current Designation I-R

Rezone North Side 41st Street To I-E



Further Rezoning Of Some Parcels To Mixed Use C-C1

Figure 94 41st Avenue Zoning

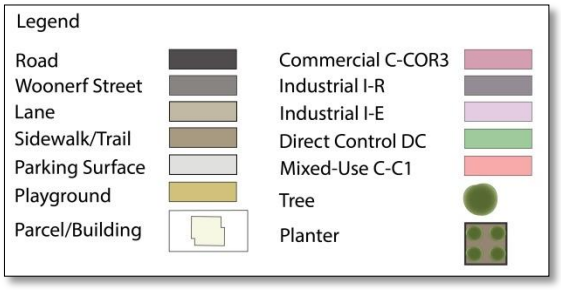
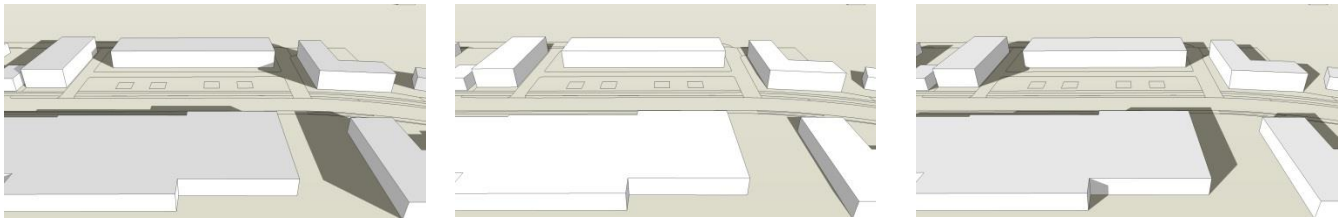


Figure 94 Legend

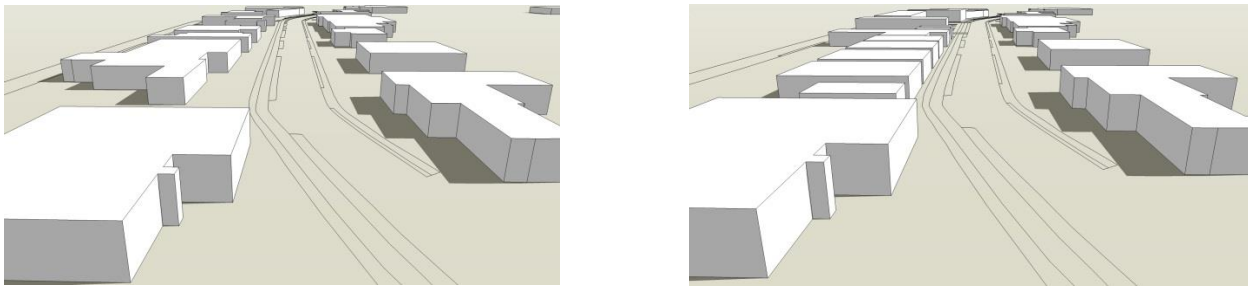
Zoning Designation	Regulation			
	Building Height	Floor Area Ratio	Setbacks	Screening
I-R Industrial Redevelopment	16m	1 max.	Front setback: no regulation Rear setback: 1.2m Side setback: 1.2m	Outdoor activities and equipment must be screened from regional pathway and lane which is shared with special purpose district (park designation).
I-E Industrial Edge	12m	1 max.	Front setback: 3m Rear: 1.2m Side: 1.2m	Outdoor activities and equipment must be screened and not visible from special purpose district (park designation).
C-C1 Commercial Community District	10m	1 max.	Front setback: 3m Rear: 3m Side: 0	Where property line is shared with a rear lane soft landscaping with trees is required.

The shadow study shows the public space would experience full sun exposure all day long even in the middle of winter. This sun exposure improves the comfort and likelihood of people staying and the length of stay in the space. The setback analysis along 41st Avenue shows the current street height to width ratio as 1:6 which lacks human scale. Over time with new operations parking lots could be moved to the rear of parcels and the setbacks reduced to a ratio of 1:4 which will help to create a much friendlier street. Moving parking to the rear of operations will also help with the separation between industrial activity and the park as per the recommendation in policy 4.4.1.



9am Noon 3pm

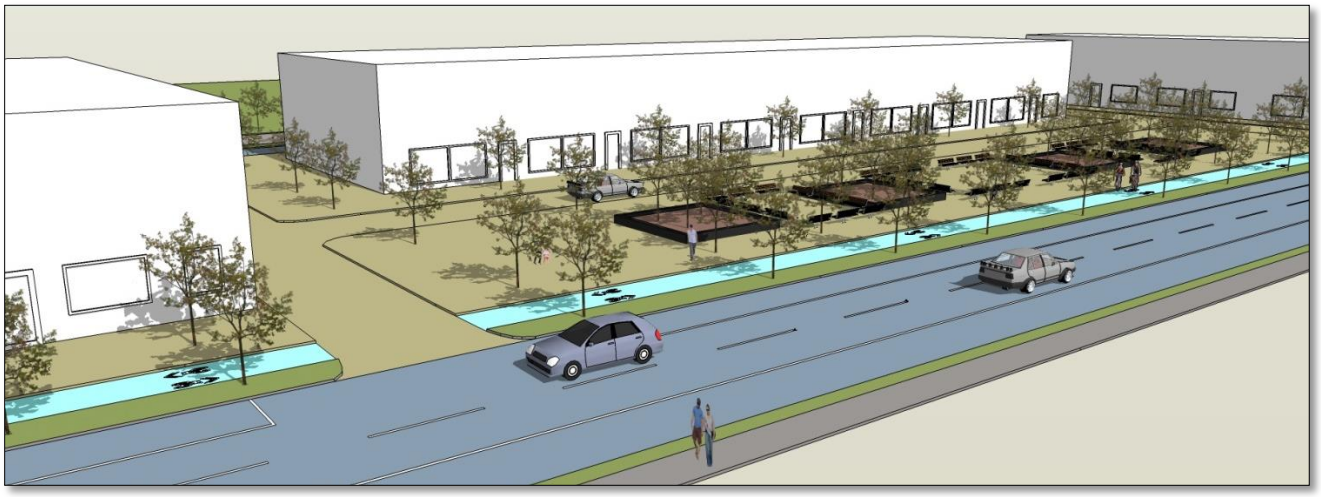
Figure 95 Shadow Study On 41st Avenue Public Space January 21st



Current Reduced

Figure 96 41st Avenue Street Setback

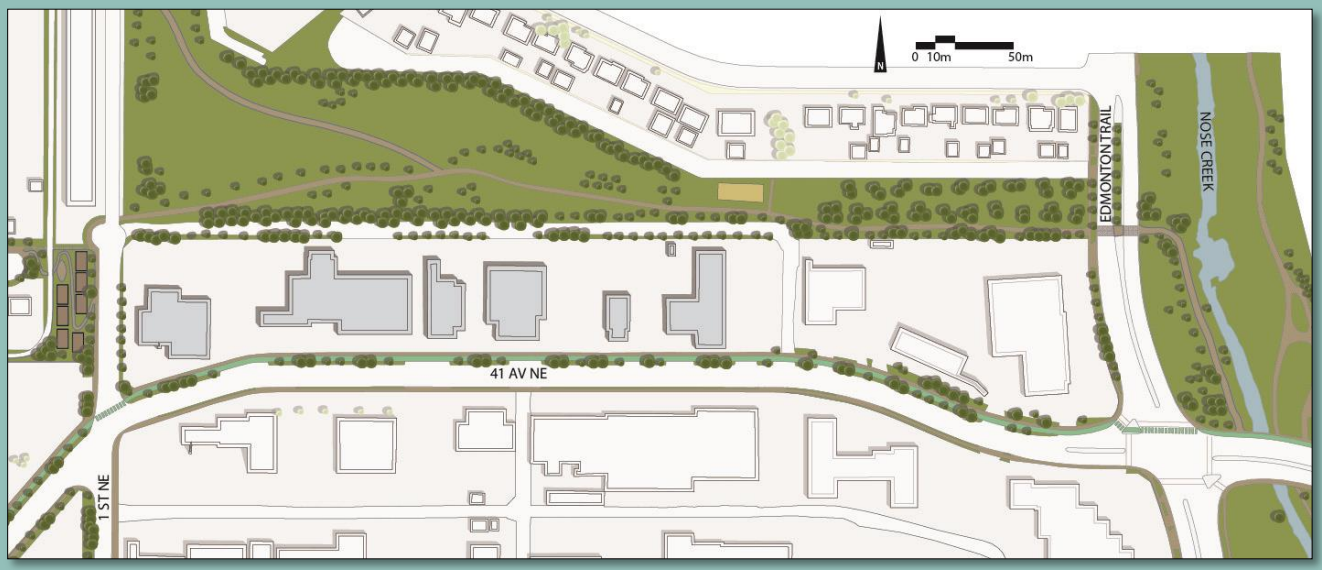
Sunset Plaza: This public space is named not just after the fact it receives sun all day until sunset but also after the Sunset drive-in movie theatre which used to be located in the middle of Highland industrial park. This historical movie reference should be incorporated into the artwork in this space. Plenty of seating should be provided along with large planters which can act as extra informal seating. Deciduous trees should be planted to provide shade in the summer and allow sun penetration in the winter. On both sides of the plaza the streets lead to the rear parking lot and park access helping to remove the accessibility issues to the park.



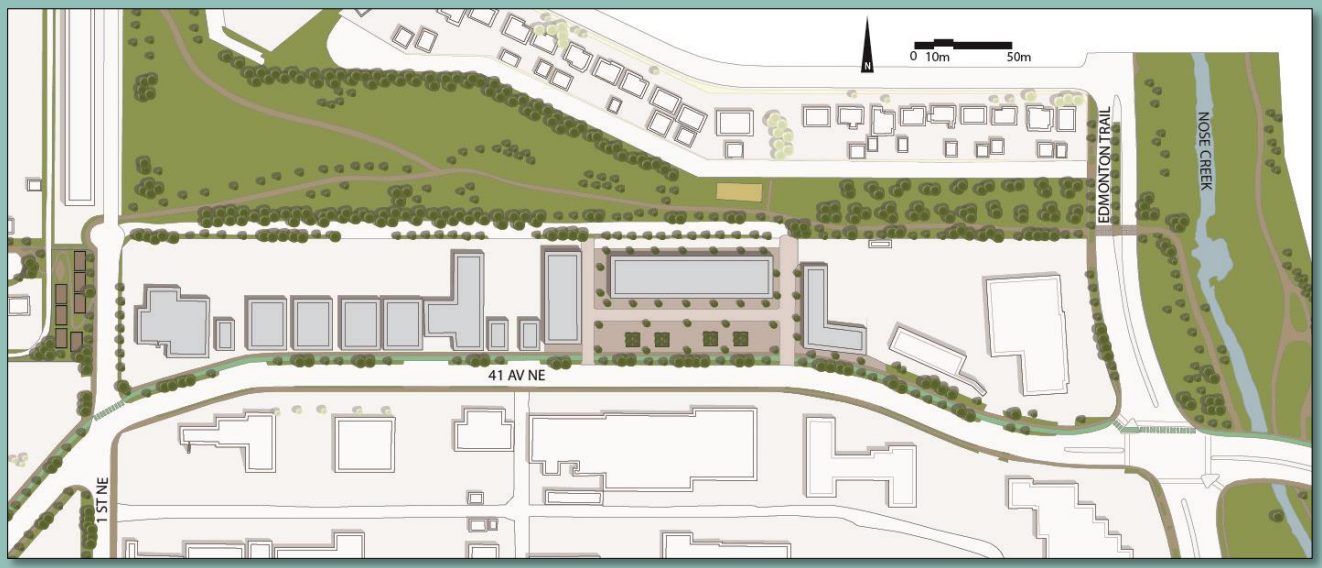
Weekend Notes Melbourne Tourist Attractions: http://www.weekendnotes.com/display-image/2/18476/img007511.JPG

Figure 97 Sunset Plaza With Movie Themed Artwork

Concept 1



Concept 2



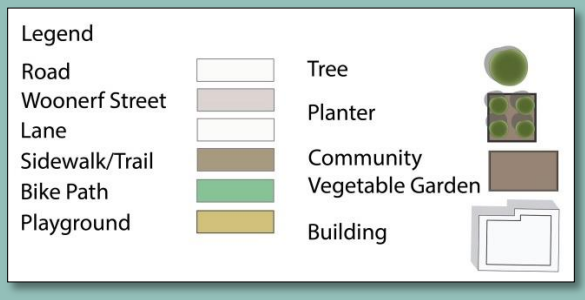


Figure 98 41st Avenue Public Realm Master Plans (Larger versions available in Appendix C)

14. 36th Avenue Intersection

The intersections along Centre Street are proposed to be developed as commercial activity nodes. The existing zonings are C-N1 and M-C1. To have a commercial activity node, the rezoning is recommended. Plazas should be designed by giving proper vertical and horizontal setbacks (refer section Land use for more detail).

14.1 Objectives

1. Designing the intersection as commercial nodes
2. Encouraging good public realm by providing urban design elements like public art, landscaped features, street furniture, etc.
3. Stepping the buildings for reducing the impact of massing and shadow
4. Generating a place of high quality environment for community gathering

MDP 2009, City of Calgary
3.3 Promoting mixed use activity centres, transit-oriented development at lower intensity level, supporting local jobs, retails and service uses.
3.4 Discouraging driveways for parking from the front sides by creating safer environment for pedestrians and bicyclists

Transit Oriented Development (TOD)
6.4 Locating pedestrian oriented uses at ground floor with glazed walls for permeability
7.1 Creating distinctive roofline making each node as a landmark, designing building configuration to create more public spaces

14.2 Design Guidelines

1. Mixed use development at the intersection for creating community activity node.
2. Provision for private and public space in form of pocket parks for private use and front setbacks for public use.
3. Traffic calming for safer pedestrian oriented environment.
4. Creation of Public art by the community at the corners of the intersection to tie the four corners and to enhance the social capital.
5. Ground level building with ~70% glazing for making edges active and legible.
6. Provision of outdoor cafe, sitting steps, landscaped corner parks, benches in groups, bike racks, open street libraries, interactive art to engage people, etc.

14.3 Design Elements of 36 Av. Intersection

The following figure is the existing land use and zoning map of 36 Av intersection at Centre Street.

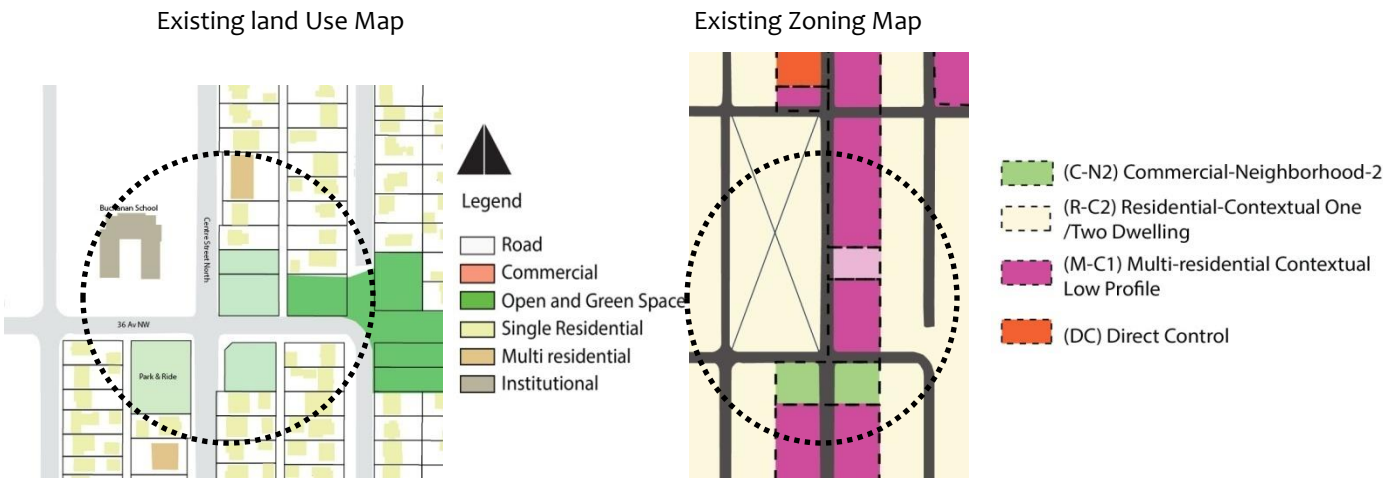


Figure 99 Land use & Zoning of Existing Development Around 36 Avenue Intersection

The existing land uses along 36 Av inter section (within black circle) are the Buchanan school, park & ride and two empty unused gas stations. The existing zoning is R-C2 for the school, C-N2 for the park & ride and gas station, and M-c1 for the gas station in front of the school.

The following figure depicts the detailed plan of the development of 36 Av intersection with Centre Street.

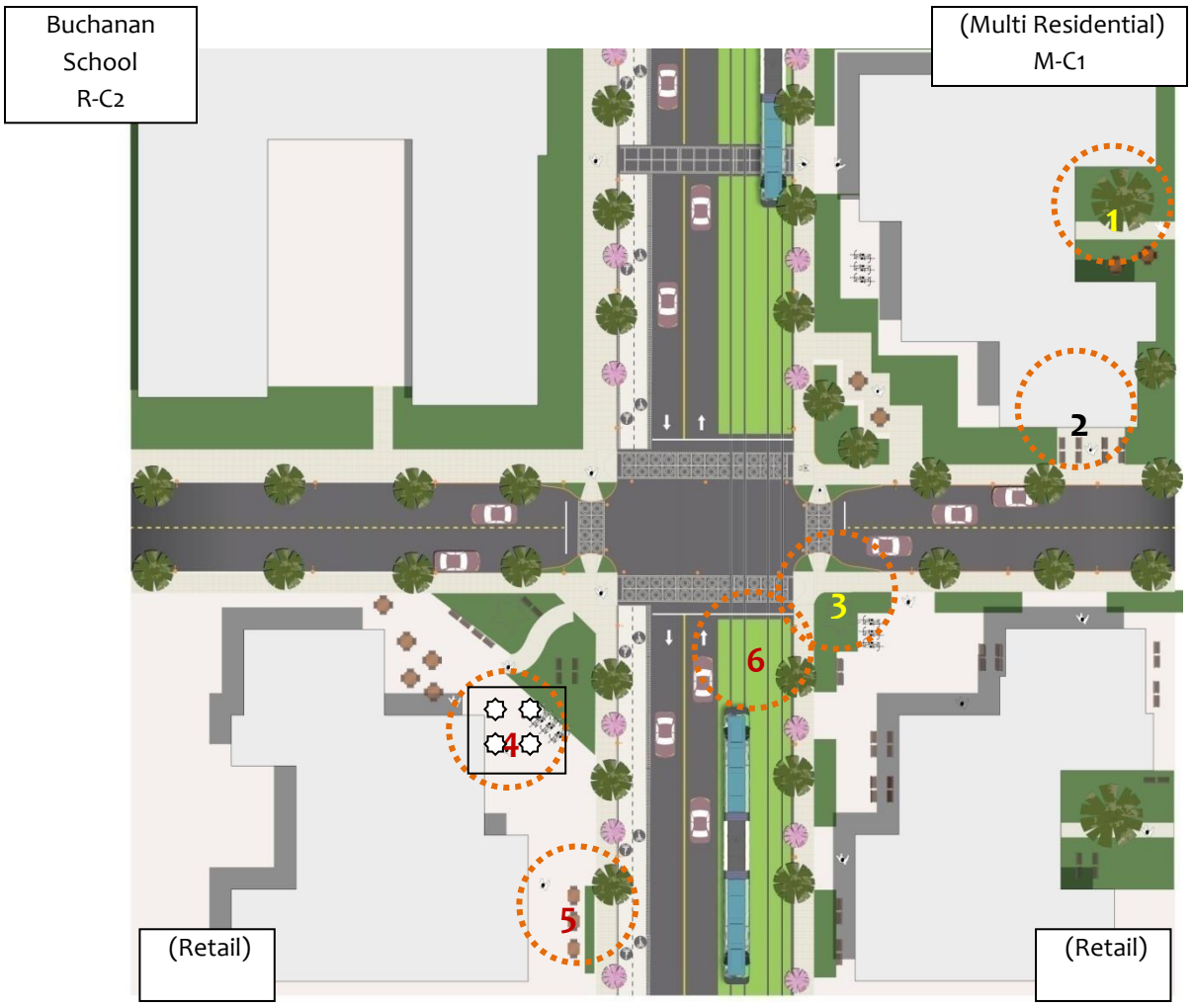


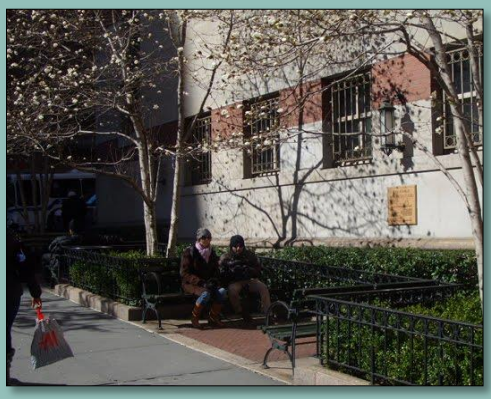
Figure 100 Detailed Urban Design Elements Along 36 Av. Intersection

Following are the design elements shown in the above figure:

1. Pocket parks with movable chairs for private use facing towards the proposed green landscaped area.
2. Inserted setbacks in the building to create places for gathering. Providing benches, newspaper stands or library encouraging people to sit and spend some quality time outside their home.
3. Human scaled public art where people can involve with the art. Examples include animals and human figures.
4. Public activities like outdoor giant chess engaging people, creating curiosity.
5. Outdoor restaurant with tree buffers providing colourful street landscape.
6. Green rail track for sustainability.

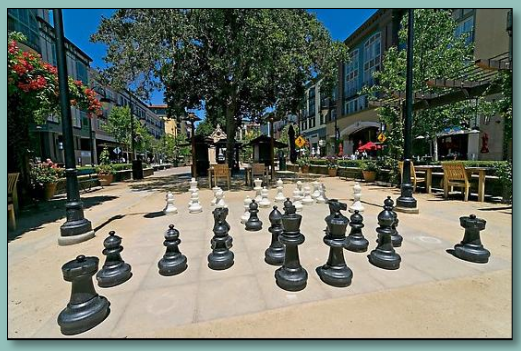
The description of numbered location shown in the detailed plan (above) of 36 Ave. intersection

1 Pocket park at New York City



2 Benches, Lexington Av, Manhattan

3 Human Scaled Public Art, Laguna Beach, California



4 Giant Road chess, San Jose, California

5 Outdoor restaurant, Carnabay, London

6 Green LRT rail track, Bilbao, Spain

Figure 101

14.4 Shadow impacts due to massing of new development

For the month of January and February, shadow analysis is done. The following figures show the shadow analysis. Most of the time throughout the year, shadow impact is less on streets and adjacent buildings.

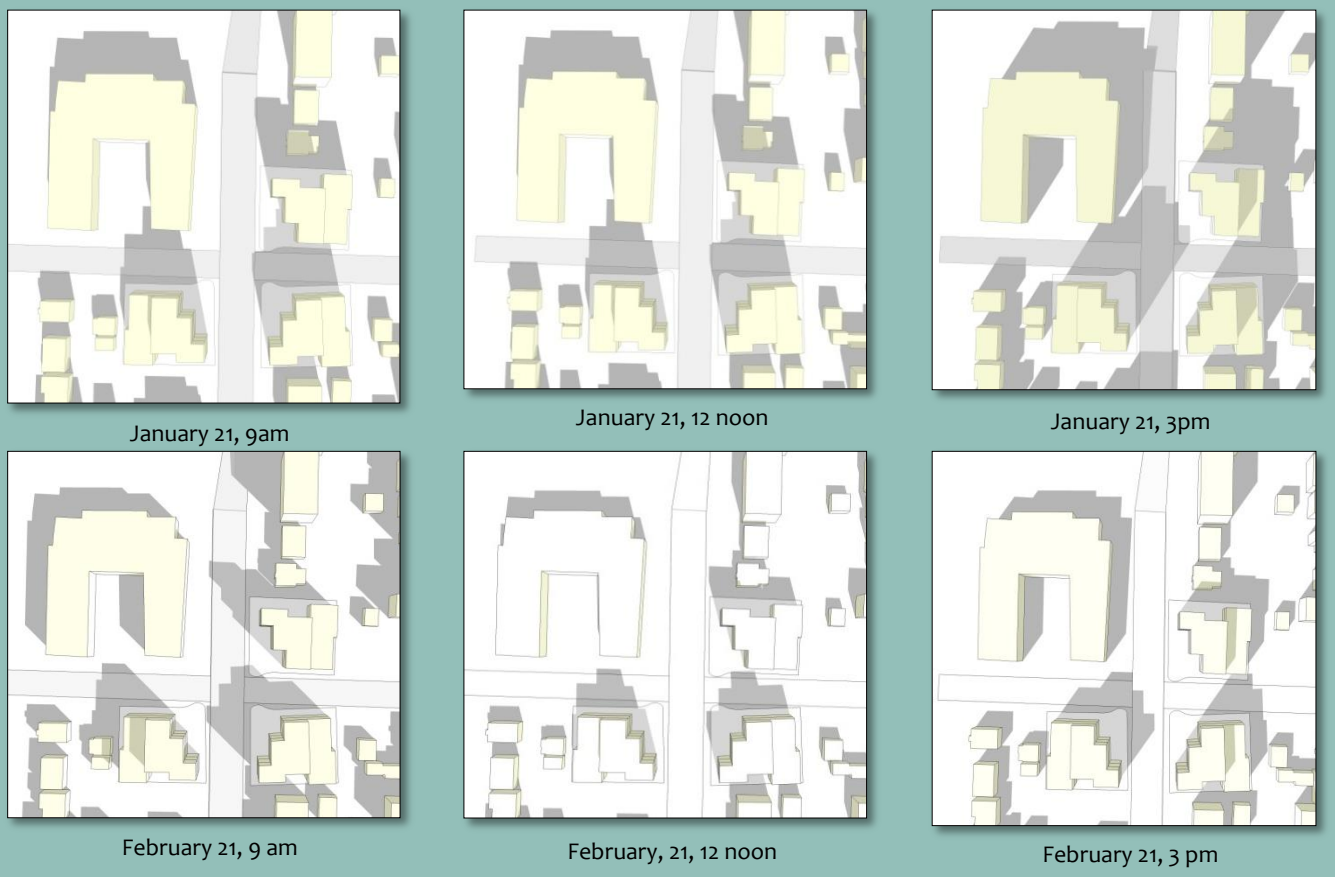


Figure 102 Shadow Study

The following figure is the cross section of proposed building at 36 Av intersection. The building has a 5m setback horizontal (circle 5 below) as well as vertical (circle 6 below). The building mitigates the shadow and massing impact on open spaces and private amenity areas along with reduction of the visual impact due to building heights.

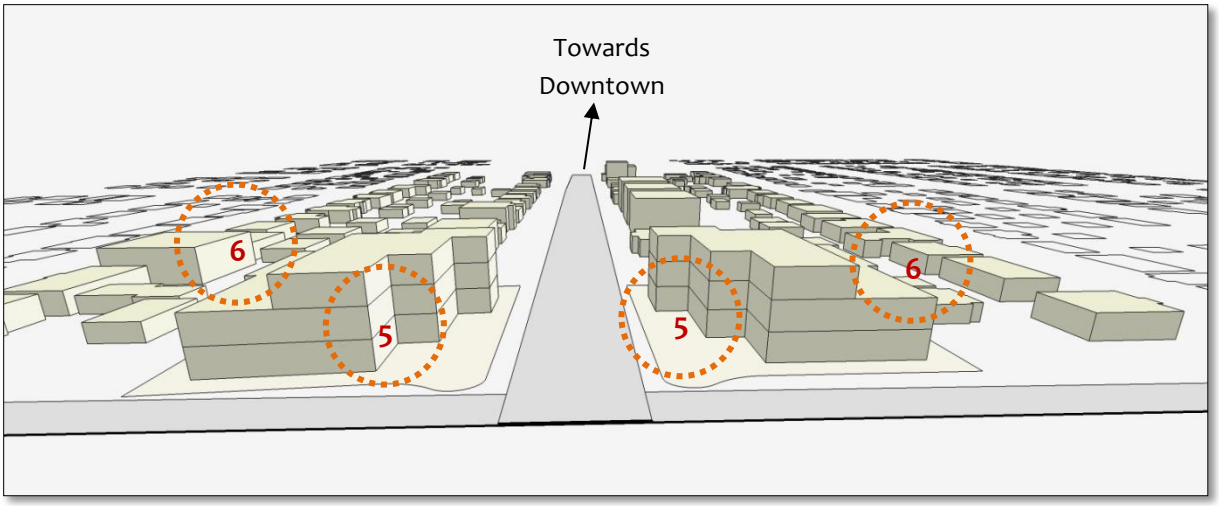


Figure 103 Horizontal (5) and vertical (6) setbacks of buildings along 36 Av. intersection

The above figure shows elevation of proposed commercial buildings at the intersection for creating a commercial activity node. The setback is proposed after 10m of height for mitigation of the shadow and massing impact. The following figure is the 3D view of proposed 36 Av intersection which shows green LRT and urban boulevard with public art.

Figure 104

Figure shows the green rail track with floral cherry blossom trees at the Centre Street showing a special effect. A buffer is created between vehicle lane and LRT rail where by planting floral vegetation. A buffer of flowers is also provided for separation of LRT tracks with adjacent vehicle lane. A public art plaza is created at the space left due to horizontal setback of the building, shown in orange circle.

15. Centre Street Design

Centre Street is a significant urban Boulevard in Calgary. It defines the east and west halves of the city for the purpose of street addresses and get terminated at the landmark building "Calgary Tower". North Central LRT is a possible future attraction on it. Keeping Transit oriented development (TOD) guidelines, the redevelopment of land use next to both sides of Centre Street is proposed. The street has varying width of its right of ways. Assuming arrival of LRT and subsequent land use redevelopment, the street design is proposed.

15.1 Objective of the Centre Street design as "A Complete Street"

The street is redesigned for all modes of commutation within limited and current right of way of street. It should encourage pedestrians, seniors, disables, kids, bicyclists, and all income group people to transport to different communities. It should promote various public activities. It should support the principle of sustainability by providing green LRT track.

15.2 Design Elements

The following sequence of the preferences, as shown in the pyramid, the street design elements are described.

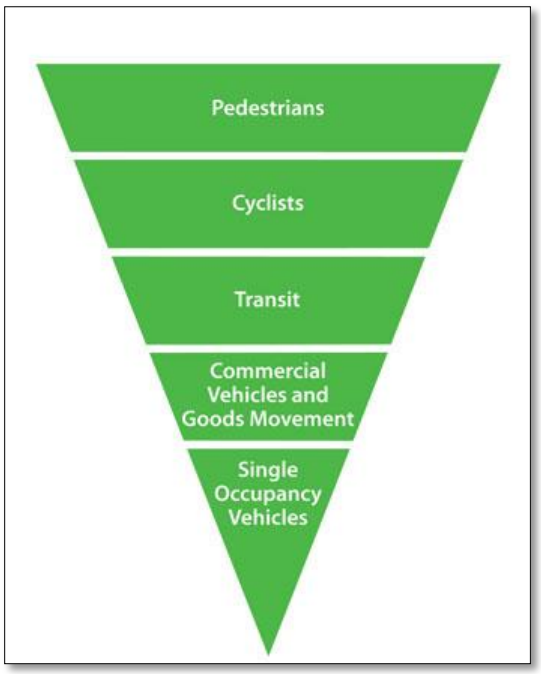


Figure 105 Mobility priority, department of Transportation, City of Victoria

Pedestrian design

2011 Interim Complete Streets Guide
3.1 Considering sidewalk principles in street design

Design Guidelines

1. Sidewalk of minimum width 1.5m is provided on both the sides of Centre Street.
2. The surface is permeable for the rain water to drain in soil.
3. Use of underground heating pipelines to allow snow removal during winter on sidewalks.

4. The path is lighted with pedestrian scaled lamp posts along with low level lights to reduce the glare
5. Separation of sidewalks with a buffer of plants from bike lane
6. Minimize level differences with gentle sloped ramps for people with disability and seniors to move comfortably

Bicycle lane design: Design streets to promote cycling as a powerful and one of the meaningful modes of transportation. The benefit is health, social interaction, pleasure, economical, and environmental sustainability.

2011 Interim Complete Street Guide
4.1 bicycle lane policy (TP011)

Design Guidelines

1. Design bike lane on west side of the street.
2. Assign width of two lanes as 2.6m.
3. Utilize the limited right of way and provide secured environment for the bicyclists based on the road width
4. Provide multifunctional bike lanes to accommodate the vehicle at the time of its breakdown.
5. Provide a buffer of 0.5m between bike lane and the vehicle lane.
6. Illuminate Bike lanes using separate lamps focussed on bike routes.
7. Use of photo-luminescing powder paint to glow bike lane in the dark for better navigation and for the clear visibility o. The powder paint (photo-luminescing powder) is charged by sun light.
8. Design of heated enclosure of bike racks at the transit stations to encourage biking.

Transit design: NCLRT: The placement of LRT rail lines of 7m width at the east side of the Centre Street separates the transit lane from other mode of transportation. The rail track is a porous surface covered with grass which is easy to maintain. The track is separated from vehicle lane by a buffer of plants which could be floral during summer to enhance the garden look along the track.

Figure Green rail track, Bilbao, Spain

Figure Public art of human scale, Jordan

Figure 106 Transit Line Features

The following are the advantages of proposing green rail line

1. Reduction of air and noise pollution
2. Reduction of permeable road surface
3. Enhancement of the streetscape
4. Demarcation of the rail track for safety

Vehicle lane design: Two way vehicle lanes of 6m width are designed next to bike lanes.

Traffic calming policy (TP002)
Consider traffic calming techniques to reduce the traffic impact on street pedestrians making streets more pedestrian friendly.

Design Guidelines
1. Providing curb extensions toward local streets and at mid-block locations to enhance streetscape and provide opportunity for landscape and public art
2. Providing road cushions to reduce the traffic speed and help in community related safety issues
3. Providing raised crosswalks to make streets safer to use
4. Using textured crosswalks with lights embedded in roads to improve the visual appearance of the intersections.

Accessible Design elements

Calgary Transportation Plan
3.11 universal access by making streets more accessible and liveable for people with disabilities and for seniors

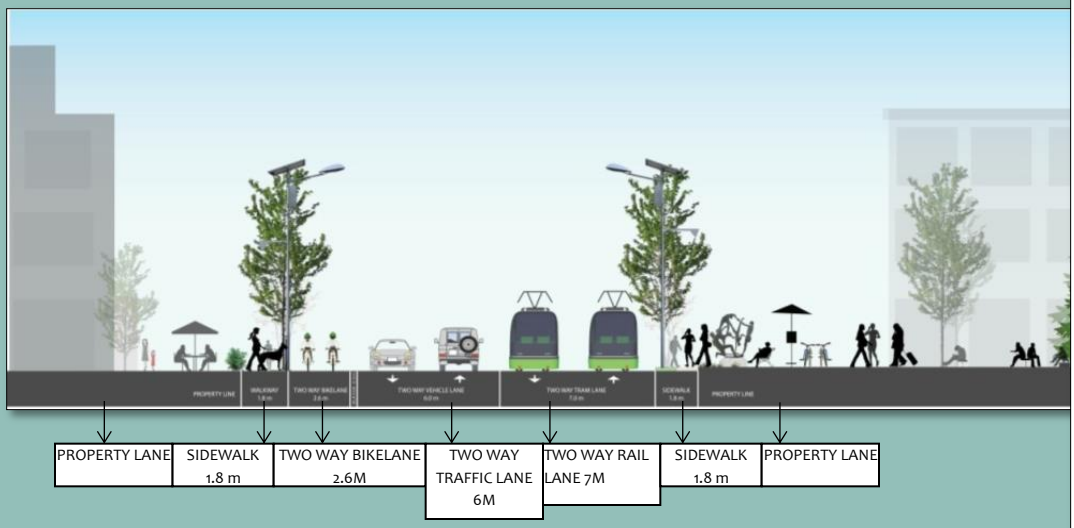
Design Guidelines
1. Provision of levelled sidewalks with minimum width of 2.5m so that wheel chair person can move together with an able person
2. Provision of hand rails at heights near sidewalks to help seniors to walk with comforts
3. Provision of gentle slope ramps, audio signals at road crossing to easily recognize the noise generated by traffic
4. Provision of benches on the sidewalks for seniors and people with disabilities to sit and take rest

Streetscape design

2013- Interim Complete Streets guide
8.1 Green sustainable design to protect natural environment and low impact development

Design Guidelines
1. Providing impervious surfaces on sidewalks to prevent surface run-offs
2. Planting in filtered planters, bio swales along road side curb extensions
3. Using layered tree canopy to reduce urban heat island effect
4. Using solar street lights with LED to reduce glare at night
5. Using green rail track to reduce permeable road surfaces
6. Using xeriscape to reduce irrigation requirements of water

The following figures show the cross sections at various width of Centre Street.



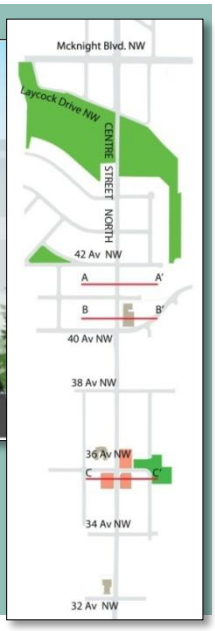


Figure 107 Cross Section C-C′ of Centre Street at 36 Av intersection with street ROW 19.7m

The cross section C-C' in the above figure is at 36 Av NW where the width of right of way is 19.70m. The spatial character of the adjacent plazas is making the space more vibrant. The wireless internet kiosk is the main attraction at the plaza. The presence of human scale public art engages the pedestrians. The outdoor restaurants enhance the public realm. The street trees and the floral canopies form an enclosure and a buffer. The horizontal and vertical setbacks of adjacent buildings provide openness to the space. Finally, the windows and glazed walls at eye level of the buildings engross the place with high permeability and legibility.

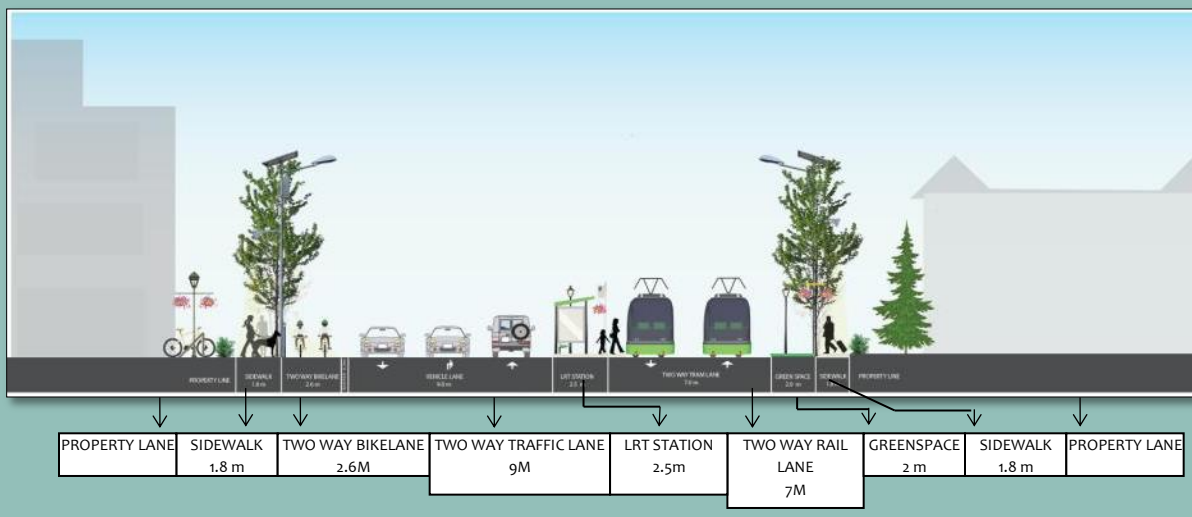


Figure 108 Cross section B-B′ of Centre Street between 40 & 41 Av NW with street ROW 27.4m

In the cross section B-B' as shown in the above figure, the width of Centre Street is 27.5m where the 2.5m wide LRT station is located on left side of LRT lane. The third traffic lane is allowing traffic to turn left at 41 Av NE. The location of this section is shown in the key map shown above. Existence of floral lamp post enhances the station design. The station enclosures are illuminated for good visibility.

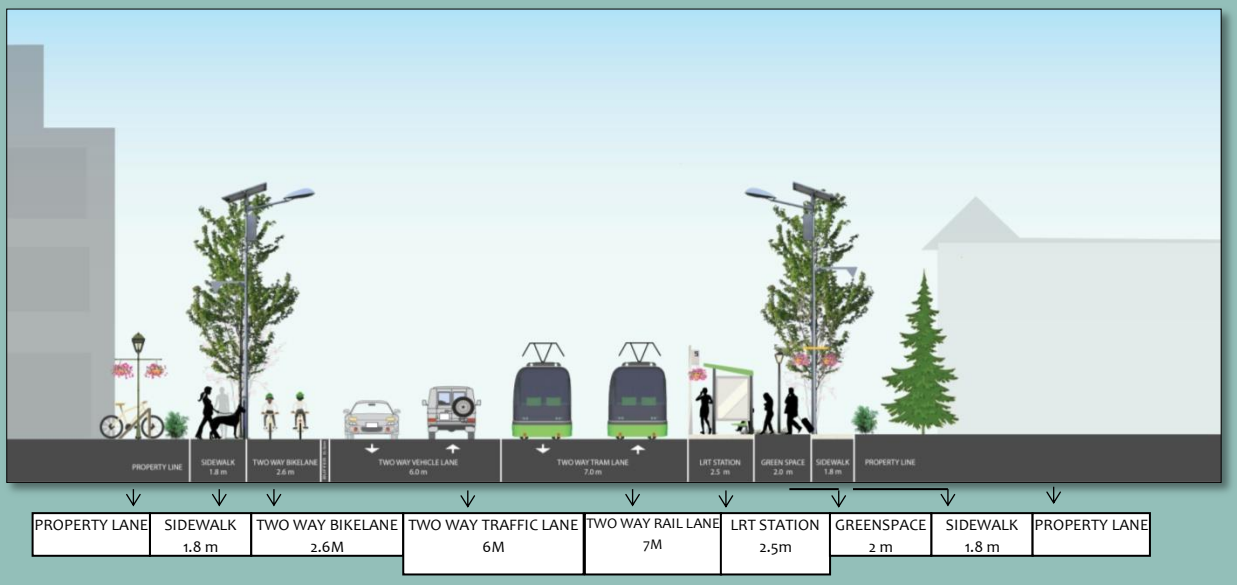


Figure 109 Cross section A-A' of Centre Street at Community Heart with street ROW 24.5m

The cross section A-A' in the above figure is of the street with 24.5m right of way where the station is on right side of LRT. Green space of width 2m is designed next to the LRT station for street furniture like map kiosk, benches, street library or cafe kiosk.

Figure Musical swing next to street, Montreal [1]
Making pleasant sound and colourful lights at night time

Figure Public art at road intersection, Portland [2]
"Share-It-Square", intersection as a local gathering spot

Figure 110 Precedents

Figure Illuminated LRT Stations, Calif, California
Source: http://landscapeonline.com/research/article/18122

Figure Public art bench

Figure Illuminated Sidewalks, Lonsdale, London

Figure open air free Wireless Internet Kiosk, Scotland with umbrella top illuminated, phone charger, dual operational viewing screen
Source: http://www.technovelgy.com/ct/Science-Fiction-News.asp?NewsNum=918

Figure Glow highways, The Netherlands

Figure 111 Precedents

15.3 References:

[1] http://www.tourisme-montreal.org/blog/21-swings-brings-music-to-the-quartier-des-spectacles/
[2] http://sustainablecitiescollective.com/embarq/172406/friday-fun-paint-your-way-safer-streets

16. Conclusion

Below is a map showing all the proposed plans for the community.

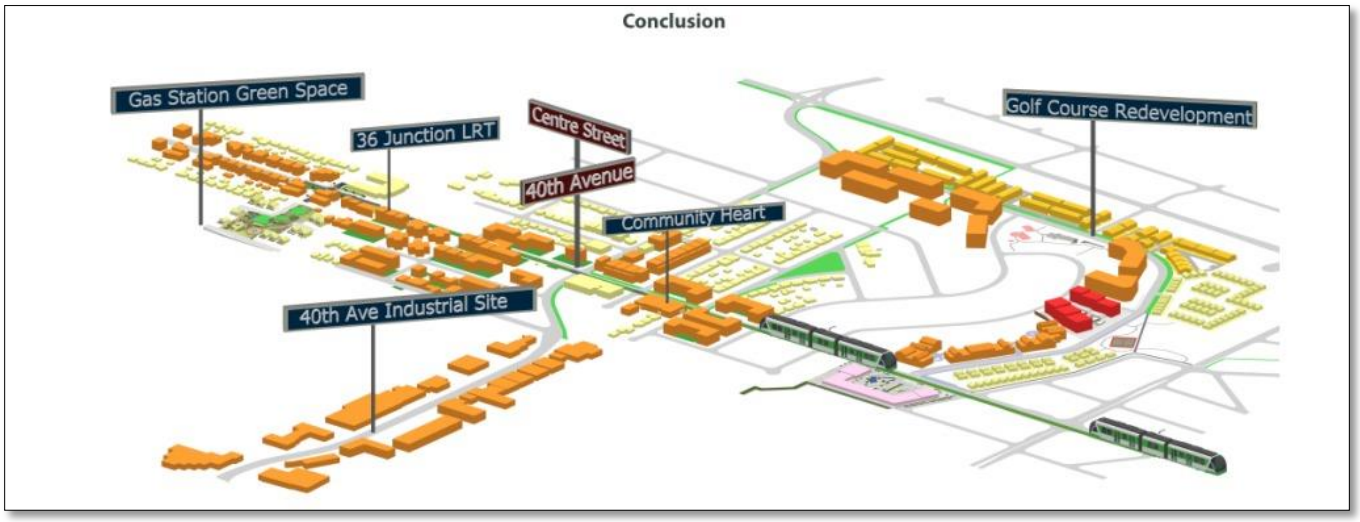
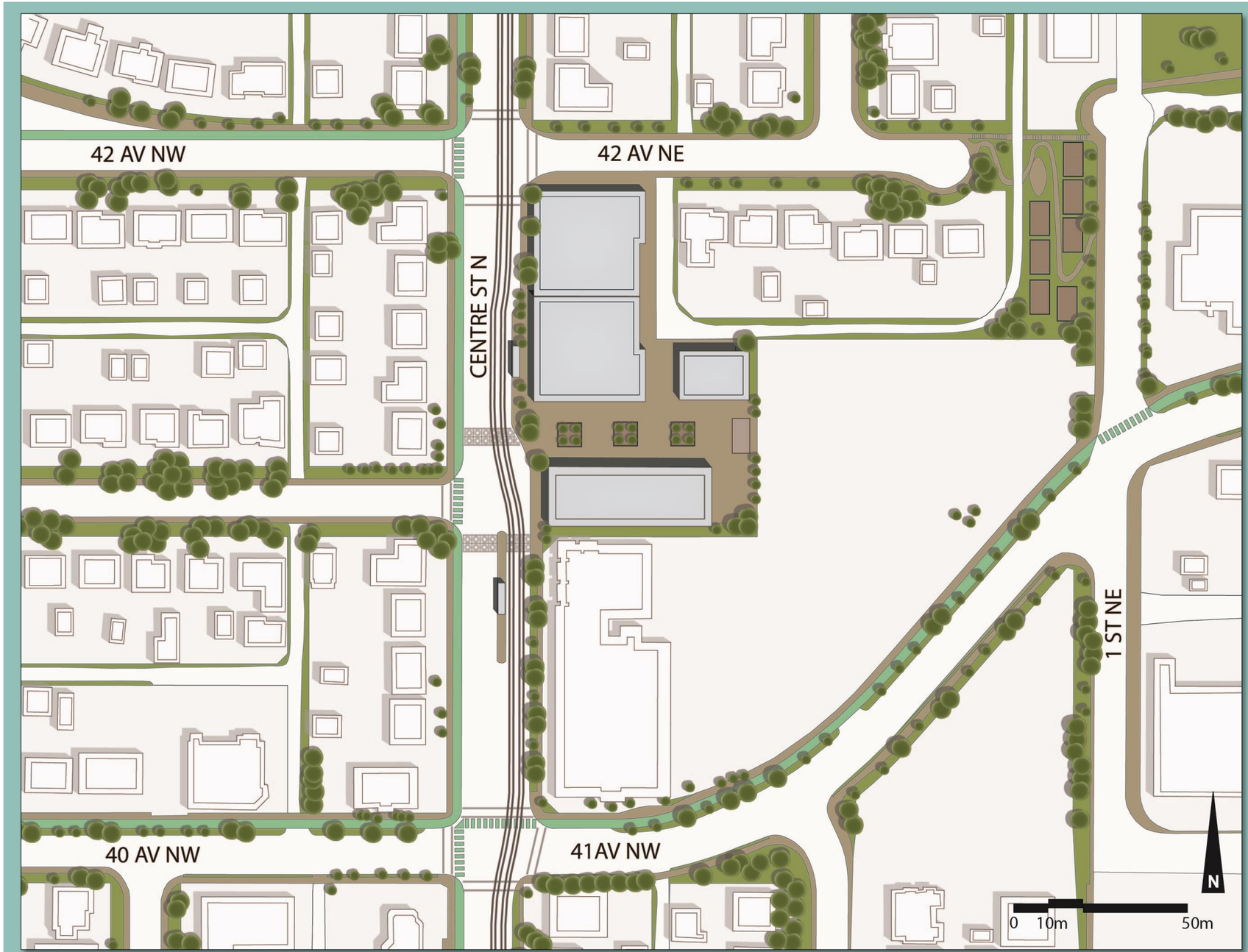


Figure 112 Highland Park Plan

Appendix A

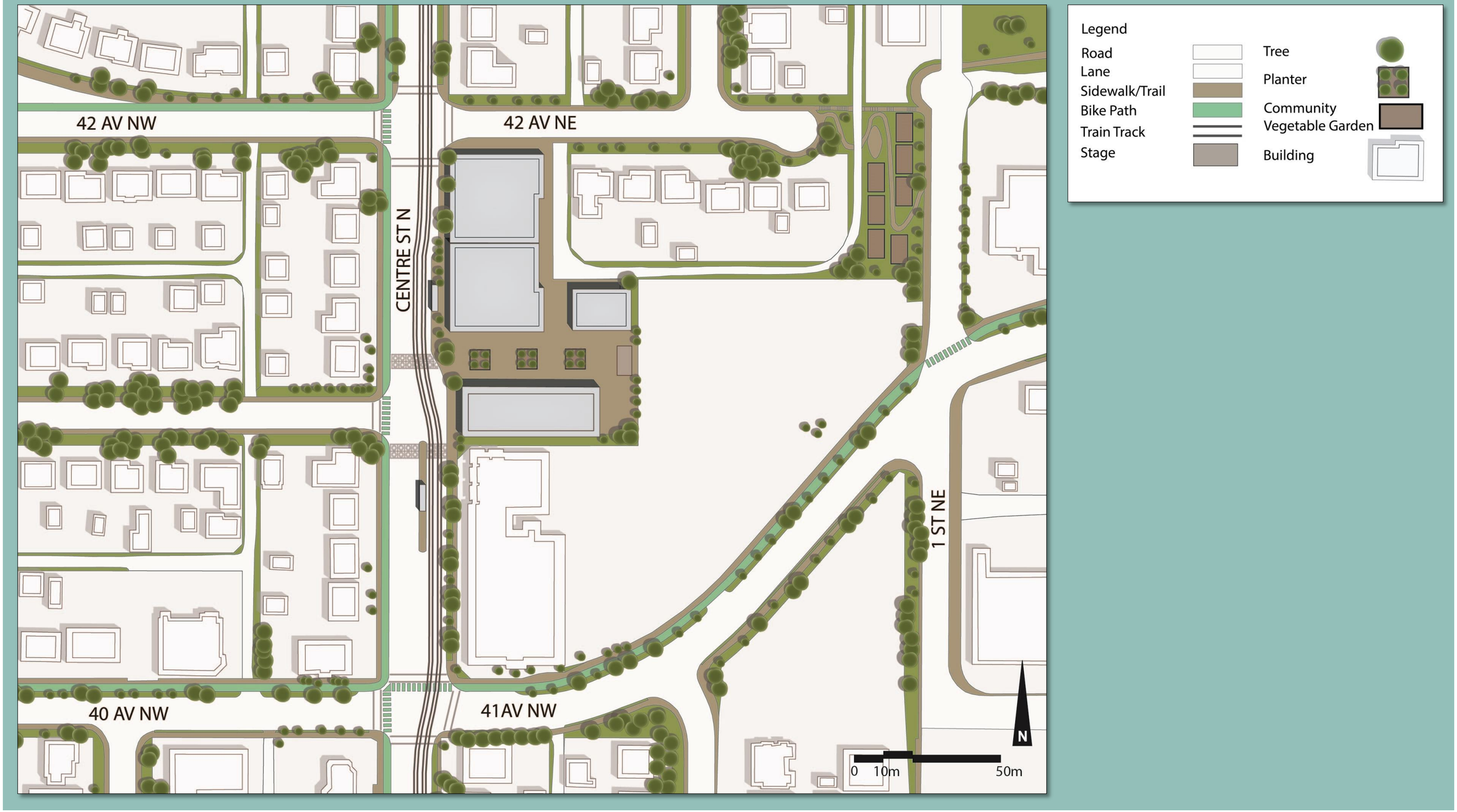
Elevation of Existing & Proposed Centre Street

Appendix B



Legend

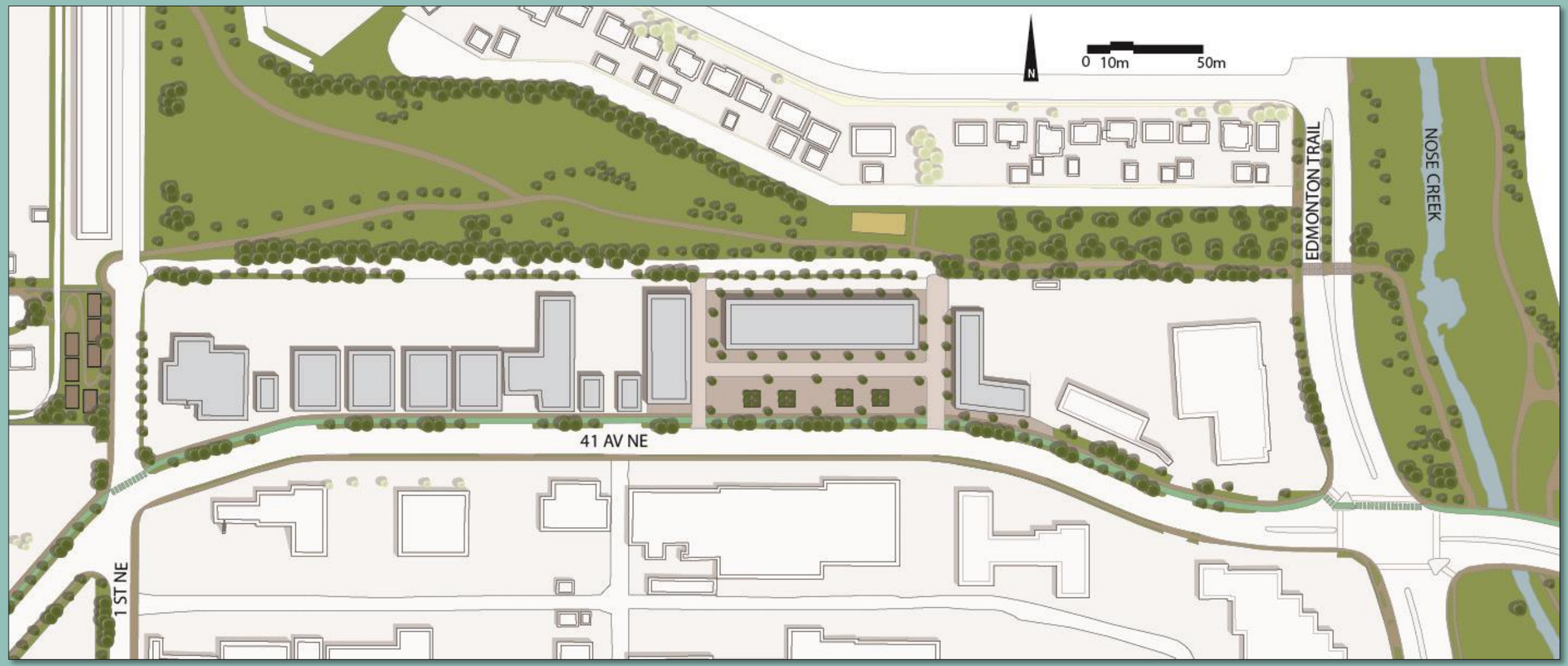
- Road
- Lane
- Sidewalk/Trail
- Bike Path
- Train Track
- Stage
- Tree
- Planter
- Community Vegetable Garden
- Building


42 AV NW
42 AV NE
CENTRE ST N
1 ST NE
40 AV NW
41AV NW
N
0 10m 50m
Legend
Road
Lane
Sidewalk/Trail
Bike Path
Train Track
Stage
Tree
Planter
Community Vegetable Garden
Building

Appendix C

Legend

Road		Tree	
Woonerf Street		Planter	
Lane		Community Vegetable Garden	
Sidewalk/Trail		Building	
Bike Path			
Playground			



Legend

Road		Tree	
Woonerf Street		Planter	
Lane		Community Vegetable Garden	
Sidewalk/Trail		Building	
Bike Path			
Playground			