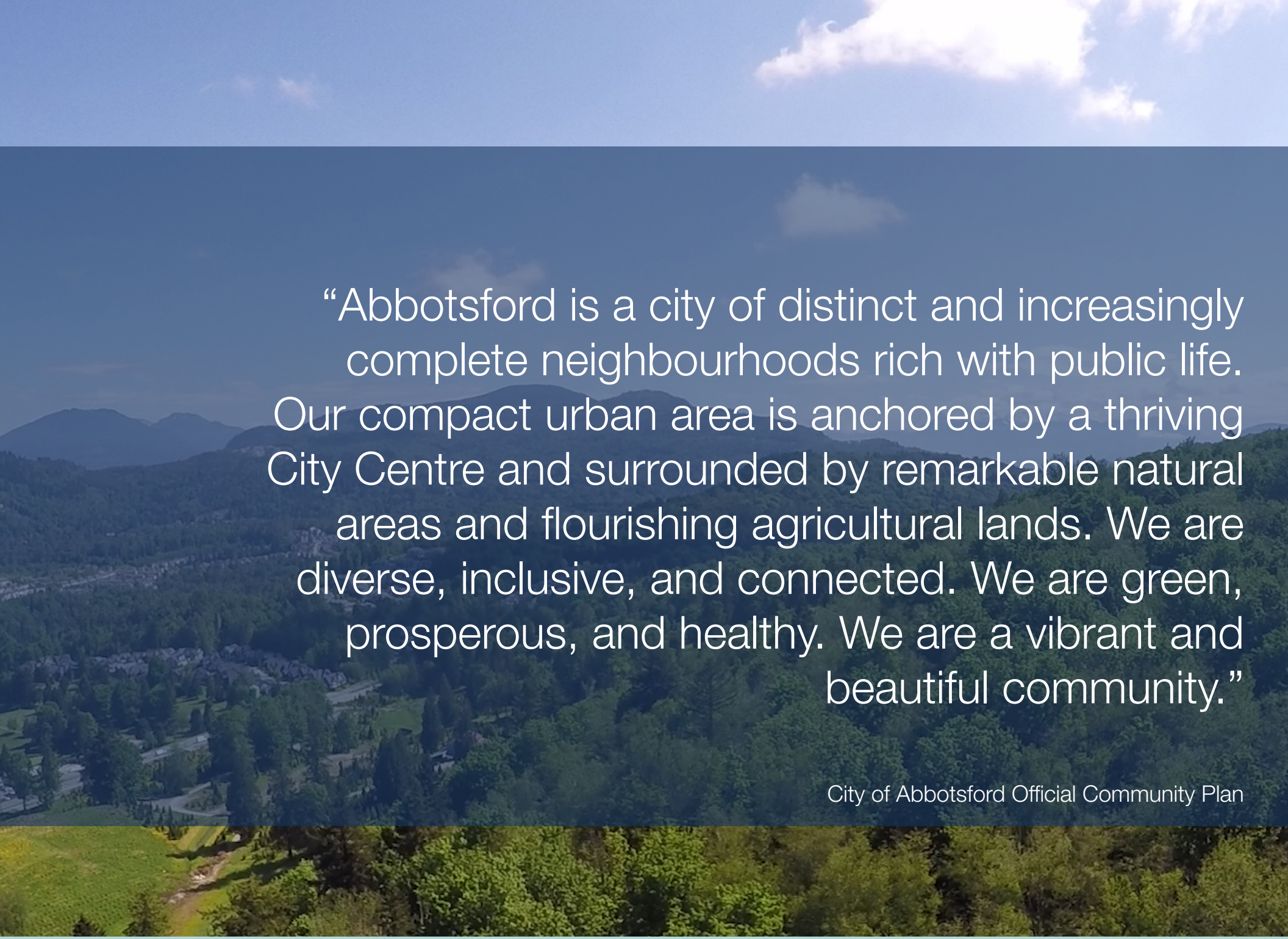
MCKEE | NEIGHBOURHOOD PLAN

Background Research Report - Summer 2020



plan FOR 200K

ABBOTSFORD



"Abbotsford is a city of distinct and increasingly complete neighbourhoods rich with public life. Our compact urban area is anchored by a thriving City Centre and surrounded by remarkable natural areas and flourishing agricultural lands. We are diverse, inclusive, and connected. We are green, prosperous, and healthy. We are a vibrant and beautiful community."

City of Abbotsford Official Community Plan

Table of Contents

Executive Summary 5

1.0 Introduction 7

1.1 Abbotsford Official Community Plan 8
1.2 Implementing the OCP 10
1.3 Plan 200K 10
1.4 Neighbourhood Plan Process 11
1.5 Defining a Boundary 12
1.6 Existing Schools, Parks and Trails 13
1.7 People and Households 14
1.8 Stage 1 Context 15

2.0 Environmental 18

2.1 Geotechnical 19
2.2 Watercourses and Riparian Areas 23
2.3 Species at Risk/Wildlife 26
2.4 Wildlife Linkages/Corridors 28

3.0 Archaeological and Cultural Heritage 33

3.1 Archaeological Overview Assessment 34
3.2 Field Investigations: Preliminary Field Reconnaissance. 34
3.3 AOA Results 35
3.4 Previous Archaeological Assessments 36
3.5 Recommendations for Stage 2 37

4.0 Net Area 39

4.1 Determining Net Area 40

5.0 Existing Infrastructure 43

5.1 Stormwater 44
5.2 Transportation 45
5.3 Wastewater 46
5.4 Water 47

6.0 Engagement Strategy 49

6.1 Who we will Engage 50
6.2 How and When we will Engage 51

7.0 Next Steps 53

Table of Figures

Figure 1. Seven Big Ideas (2016)..... 8
Figure 2. Plan200k..... 10
Figure 3. McKee Demographics..... 14
Figure 4. Qualitative Probabilites of Occurance (table).... 19
Figure 5. Net Area Analysis 41

Table of Maps

Map 1. Urban Structure..... 9
Map 2. Adopted Neighbourhood Plans..... 10
Map 3. McKee Neighbourhood Plan Boundary 12
Map 4. Existing Schools, Parks and Trails 13
Map 5. Planning Stages 15
Map 6. Property Access..... 16
Map 7. Terrain Stability..... 20
Map 8. Slope Crest and Toe Features..... 21
Map 9. Geotechnical Hazard Areas..... 22
Map 10. Riparian Areas..... 25
Map 11. Habitat Hubs 27
Map 12. Wildlife Linkages 28
Map 13. Phantom Orchid Existing Conditions..... 30
Map 14. Phantom Orchid Proposed Setback Areas 31
Map 15. Archaeological Overview Assessment 35
Map 16. Previous AIA and AOA Reports..... 36
Map 17. Net Area 40
Map 18. Stormwater System..... 44
Map 19. Transportation System 45
Map 20. Wastewater System 46
Map 21. Water System..... 47

Executive Summary

Located in the mountainous northeastern corner of Abbotsford lies a largely undeveloped area of approximately 842 hectares of land (2,080 acres). This land is referenced within Abbotsford's Official Community Plan (OCP) urban structure as the New Neighbourhoods. The McKee Neighbourhood Plan (McKee NP) will be the planning process which will transform this area into a complete neighbourhood that will help implement the vision of the OCP.

This Background Research Report is the first step towards creating the McKee Neighbourhood Plan, and will be the mechanism for reporting the findings from the work conducted in Stage 1. The main purpose of Stage 1 is to assess the development potential of the land (net area), and determine what land should be protected according to senior government legislation and Council policy. This assessment of determining developable from protected lands has been undertaken at a neighbourhood planning level, and will enable the planning process to move forward. A property specific assessment at the development application stage may be undertaken to refine the findings.

Prior to Stage 1 assessment, it was important for staff to recognize that a number of properties within the McKee NP had progressed further along the planning process, and had existing provisions in place which supported continued urban development. As a result of this status within the planning process, these lands did not require a complete Stage 1 assessment. However, a majority of the lands had not progressed far enough along the planning continuum, and are subject to the adoption of the McKee Neighbourhood Plan, as stipulated within the New Neighbourhoods section of the OCP (Part II-2-11).

Another important step for Stage 1 assessment was gaining access to properties. This enabled consultants to physically inspect the land, and perform the field studies needed to determine development suitability. With permission granted to access land, consultants conducted environmental analysis focusing on three key environmental categories that were determined through provisions in the OCP: geotechnical, watercourses and riparian areas, and habitat for species at risk.

The geotechnical overview assessment was completed to determine what land was suitable for development, and a key component to this work was establishing preliminary development setbacks from the toe and crest of steep slopes. A review of all watercourses and riparian areas was conducted to classify water features within the landscape and determine appropriate setbacks as per the *Water Sustainability Act* and the Streamside Protection Bylaw. Habitat for species at risk was evaluated, and consideration of topographic conditions and watercourses and riparian habitats were used to inform the identification of landscape level wildlife linkage opportunities for wildlife migration around or through future development areas.

Another important consideration for Stage 1 was to identify any lands with archaeological potential or classified as being culturally significant. The McKee NP is located within the asserted traditional territories of the Sumas (Sema:th), Leq'a:mel and Matsqui First Nations of the Sto:lo Nation. To ensure the archaeological and cultural heritage work was conducted under the terms and conditions established under the Heritage Conservation Act (HCA), a registered archaeological consultant was hired who also applied for a Sto:lo Heritage Investigation Permit.

Within the plan area, fifty-two areas of archaeological potential were identified as well as four Culturally Modified Trees. These were identified after extensive field work was conducted as part of the Archaeological Overview Assessment (AOA).

After assessing the environmental conditions and the archaeological and cultural heritage aspects of the plan, the findings from these assessments were modeled and analyzed with GIS to determine the net area (developable land). After the modelling was completed, the result was a projected 176 hectares (435 acres) of net area within the McKee NP.

Stage 1 infrastructure analysis focused on outlining all of the background information available for the existing stormwater, wastewater, water and transportation systems, and indicating any key considerations that would inform Stage 2 engineering work.

With the conclusion of Stage 1, the next stage will focus on exploring options for land uses, preliminary servicing, parks, trails and open space. As part of this stage an analysis will be conducted to understand what portions of informal trails in the area could be used in a new trail network designed for various user groups.





1.0 Introduction

Located in the mountainous northeastern corner of Abbotsford lies a largely undeveloped area identified in the Official Community Plan as the New Neighbourhoods. Approximately 842 hectares in size (2,080 acres), this area covers a lot of topography, and for those who frequent this area they know of its natural beauty and spectacular views in all directions. The rugged forested terrain is traversed by numerous streams, which provide habitat for a number of species of wildlife. Many of these species reside locally within the plan boundary, while others migrate through the area moving further up into the reaches of Sumas Mountain. For Local First Nations, this area is a place of deep cultural and spiritual significance, and preservation of key features of the landscape is of utmost importance.

The purpose of this Background Research Report is to provide an understanding of the 'lay of the land' and in a detailed manner provide Council, property owners, the public and First Nations with an understanding of what land within the New Neighbourhoods area is proposed as developable, and what land will be preserved due to specified criteria which will be detailed within this report. This document will also establish the foundation for future stages of work and is a critical first step in the planning process.

1.1 Abbotsford Official Community Plan

In 2016, the City of Abbotsford Council adopted a new and progressive Official Community Plan (OCP) through a process called 'Abbotsforward'. The new OCP paints a picture of what Abbotsford will be like at 200,000 residents. The Plan reflects a turning point for the City as it aims to implement change in the face significant challenges and tough choices.

7 BIG IDEAS

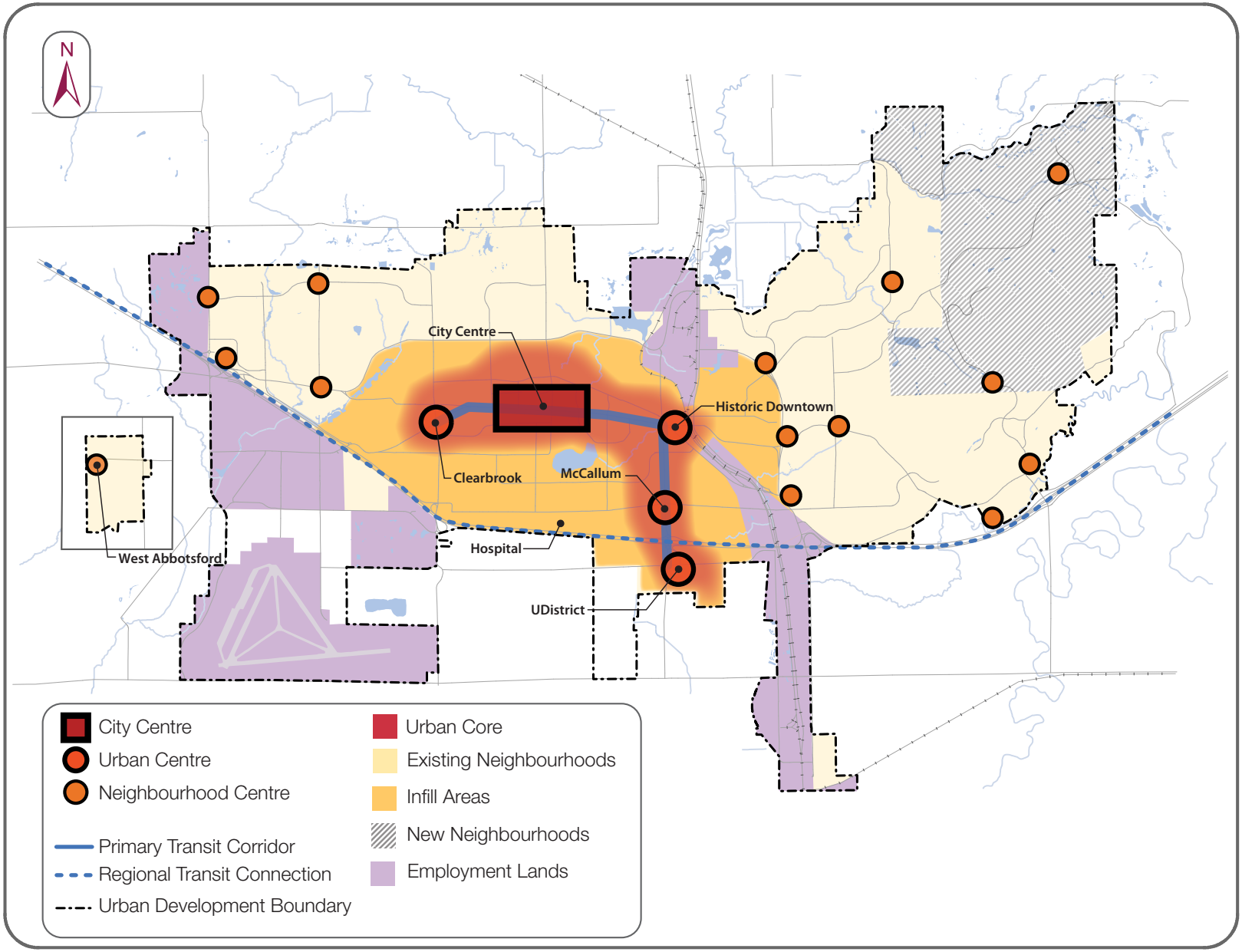
The 2016 OCP identifies seven big ideas that shape policy and comprise the most essential and transformative directions that aim to bring the vision of Abbotsford to life. The Seven big ideas are as follows:

URBAN STRUCTURE AND GROWTH PLAN

The OCP provides clear guidelines about how and where the City will grow in coming years. Abbotsford's urban structure is defined by a hierarchy of mixed use centres which are connected by a primary transit corridor that intensifies over time. Most of the future growth within the city will occur within existing neighbourhoods (75%), while the remaining 25% will occur within the New Neighbourhoods area (see Map 1). Within the life of the OCP the City is anticipated to add another 60,000 people, and this equates to approximately 15,000 new residents locating within the New Neighbourhoods.

Figure 1. Seven Big Ideas - 2016 OCP



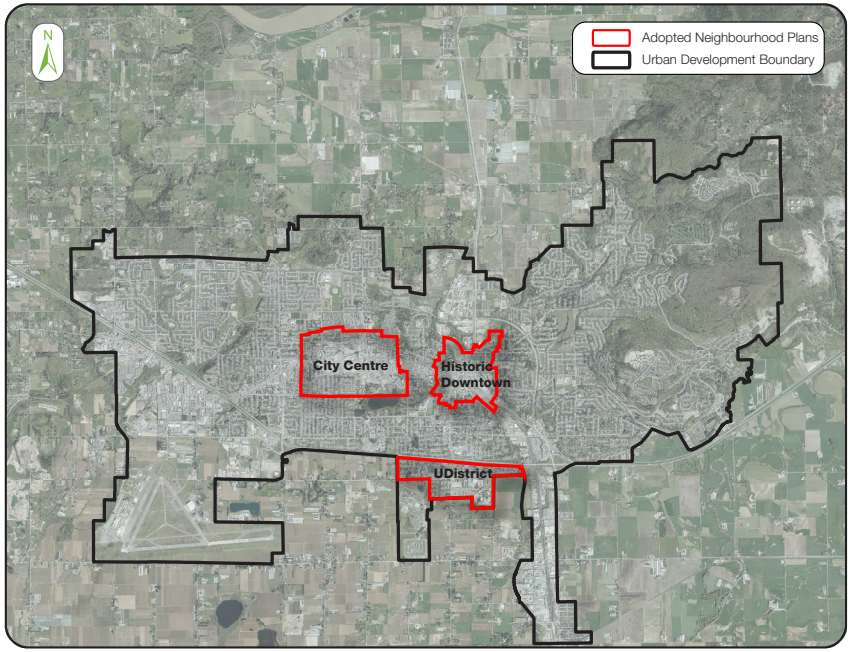


Map 1. Urban Structure - 2016 OCP

1.2 Implementing the OCP

Neighbourhood Plans are intended to be catalysts in the transformation of urban areas, spurring development in a way where each project helps achieve a common vision. They help coordinate the financing and servicing of important infrastructure components like water towers, and community detention ponds, and streets for transportation. By establishing consistent and fair requirements for development, Neighbourhood Plans help remove risk from investments by connecting a vision with implementation.

Currently, the City has completed 3 Neighbourhood Plans. The UDistrict was completed in the spring of 2018, and the City Centre and Historic Downtown NP's were completed in the spring of 2019. The McKee Neighbourhood Plan will become the planning process that will help transform the New Neighbourhoods area into a complete community with vibrant neighbourhoods that are integrated into the natural mountainous landscape. This planning process will build off of the work that was started with the McKee Peak Planning Study that was accepted by Council in November of 2005.



Map 2. Adopted Neighbourhood Plans

1.3 Plan200K

The creation of these new neighbourhood plans is part of a broader City initiative called Plan 200K. The initiative intends to coordinate the various City departments as they update master plans and strategies to reflect the vision and objectives of the OCP.

In this sense, the McKee NP and the other completed Neighbourhood Plans have an opportunity to work alongside and contribute to the development of nearly 20 other plans. The alignment between departments will ensure implementation is focused, planned, and smooth.

Master Plans and strategies that have a direct impact on the McKee NP include:



plan FOR 200K
BUILDING THE HUB
OF THE FRASER VALLEY

Figure 2. Plan200k

1.4 Neighbourhood Plan Process

The Neighbourhood Plan will be completed through a four stage process, as follows:



STAGES

Stage 1 will analyze current conditions and better understand the necessary tools and priorities to create vibrant new neighbourhoods within the McKee Neighbourhood Plan.



Stage 2 will focus on exploring options and preparing a preferred concept. This will be done through a broad engagement process framed by concept options created from the planning issues identified in Stage 1. It will also include a preliminary technical analysis of infrastructure needs.



Stage 3 will focus on preparing the first draft of the McKee Neighbourhood Plan using findings from Stages 1 and 2. It will also include a technical analysis of infrastructure needs as well as a complete Transportation Impact Assessment.



Stage 4 will focus on refining the McKee Neighbourhood Plan and having it adopted as a bylaw by Council.

OBJECTIVES

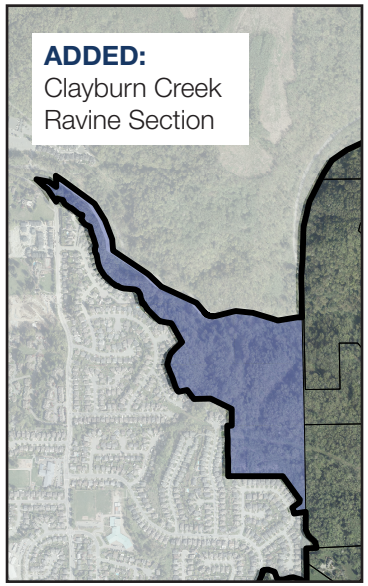
The following objectives have been established to guide the McKee Neighbourhood Plan over its 4 stage process:

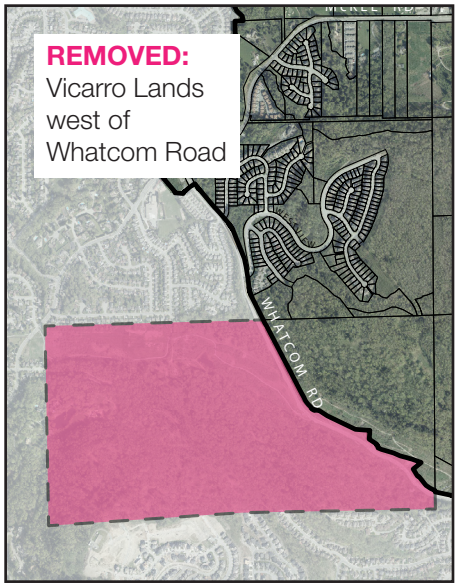
- **Undertake a targeted & inclusive community engagement process.**
- **Integrate the Neighbourhood Plan with a servicing strategy which includes orderly phasing of development.**
- **Add detail to the OCP's land uses to support a range of predominantly ground oriented housing options which complement the rugged topography.**
- **Develop design standards and guidelines that contribute to an attractive and unique Neighbourhood Centre which integrates with the mountainous landscape.**
- **Provide adequate school sites within the plan area to allow School District 34 the ability to meet the educational needs of future students.**
- **Develop an integrated and connected park and trail network which encourages walking, and both on and off road cycling as viable transportation modes, while maintaining the natural ambience of the mountain environment.**
- **Protect important cultural heritage sites by discouraging public access and locating trails away from important sites.**
- **Ensure protection of environmental features, ecosystems and biological diversity, and provide species at risk the ability to migrate safely through the neighbourhoods into the greater Sumas Mountain area.**

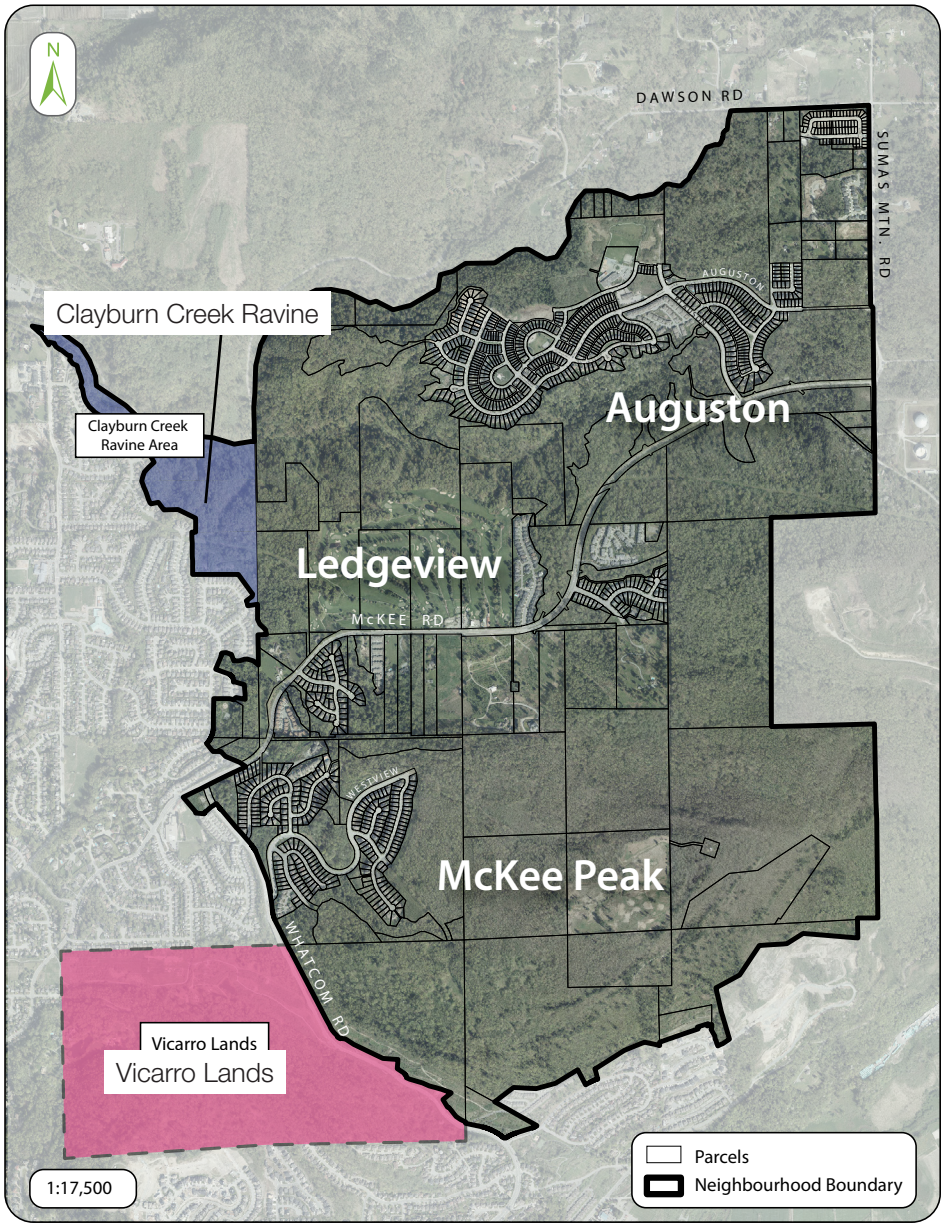
1.5 Defining a Boundary

Drawing the boundary for the McKee Neighbourhood Plan area took into consideration natural features such as topography, drainage catchments, watercourses, and man-made features such as Whatcom and Sumas Mountain Roads. The plan area is approximately 769 hectares or 1,901 acres in size.

The plan boundary differs from the New Neighbourhoods area (842 ha or 2,080 acres), in that the western portion of the Vicarro Lands (West of Whatcom Road) have been excluded from the plan area, and City owned lands south of Straiton Road within the Clayburn Creek ravine have been included. The western section of the Vicarro lands are geographically separated from McKee Peak, and their drainage catchment and Whatcom Road physically reinforce this divide. These lands are an extension of Eagle Mountain. On the other hand, the portion of Clayburn Creek ravine forms an integral component of the greater drainage for all of the lands in between Clayburn Creek and McKee Road, and is topographically connected (See Map 3).







Map 3. McKee Neighbourhood Plan Boundary

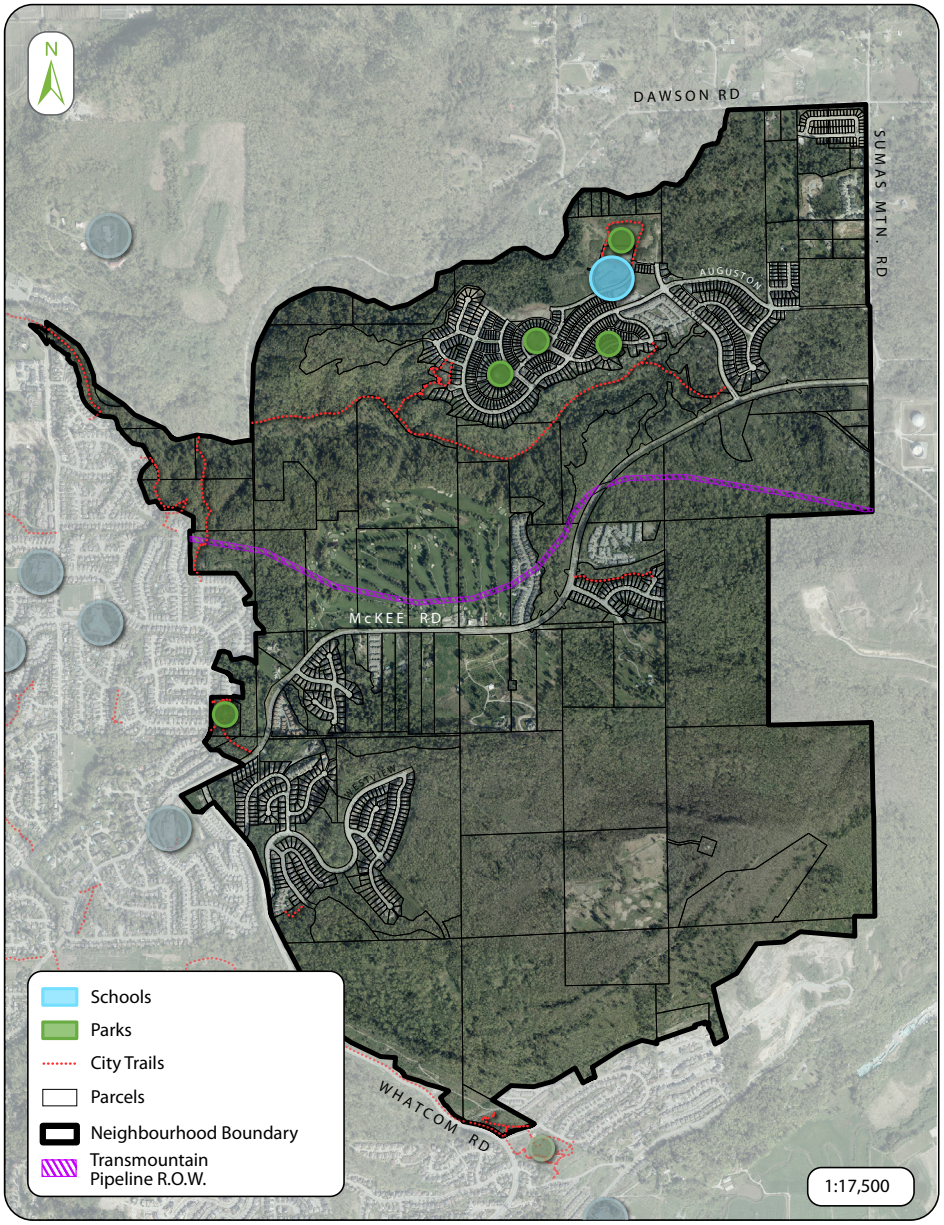
1.6 Existing Schools, Parks and Trails

Within the plan area there is one existing elementary school. Auguston Traditional Elementary School provides elementary age children within the Auguston area with educational services, while Middle and Secondary age students travel outside of the the McKee area to Clayburn Middle School and Robert Bateman Secondary School.

Currently there are five neighbourhood parks within the area. A portion of Lower Sumas Mountain Park is also found within the plan boundary. The five neighbourhood parks are as follows:

- Atwood Park
- Callaghan Park
- Mathers Park
- McKinley Park
- Shadbolt Park

There are a few City trails located within the plan area, and they are mostly located within the Clayburn Creek Ravine. A number of informal trails are also found on McKee Peak and are used extensively. During Stage 2, an analysis will be conducted to understand what portions of informal trails in the area could be used in a new City trail network designed for various user groups.



Map 4. Existing Schools, Parks and Trails

1.7 People and Households

The current population living within the Mckee Neighbourhood plan boundary is approximately 4,000 people. This is predominantly comprised of residents living within the Auguston and Highland's neighbourhoods. The population is housed within 1,193 dwelling units (including registered suites), and the average household size is comprised of 3.3 persons per dwelling unit.

Housing stock within the plan boundary is relatively new, as 87 percent of the dwellings are built in the last approximate decade and a half (2000 to 2016). The remaining 13 percent of the dwellings were constructed from a period spanning 1980 to 2000.

Median age for the area is relatively younger than the rest of the city. In Abbotsford the median age is 39 years old, while currently within the McKee NP, the median age is roughly 35 years old.

Total median household income is relatively high within the plan area compared with the rest of the City. The total median household income within the McKee NP is $122,400, while the total median household income for the entire City is $72,500.



Figure 3. McKee Demographics

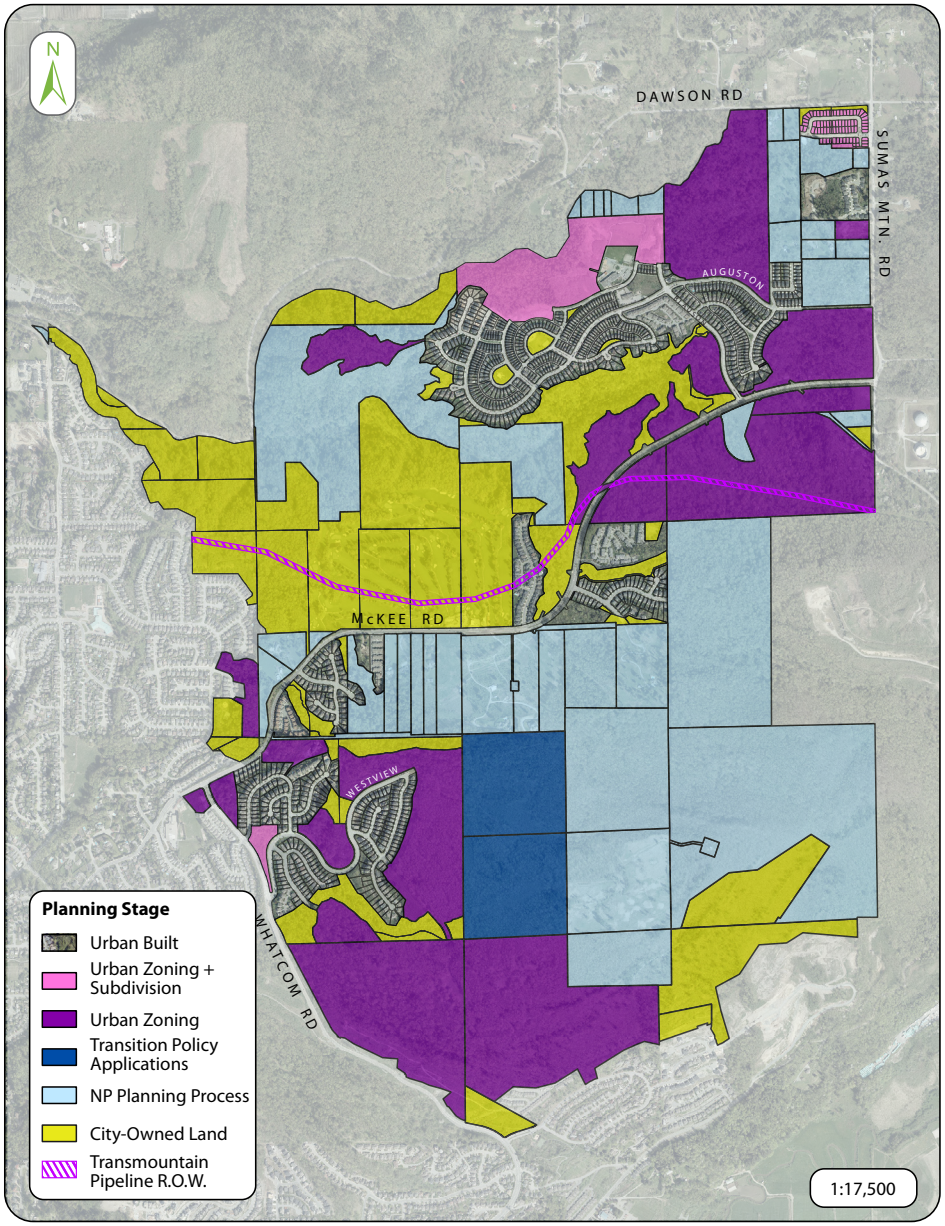
1.8 Stage 1 Context

In order to determine developable land within the plan area, there first needed to be an understanding that properties within the NP are at various stages of the development approval process. Prior to the adoption of the updated OCP in 2016, some properties within the plan had progressed further along the planning process, and had existing provisions in place which supported continued urban development. This was not the case for all properties, as they are reliant on completion of the McKee Neighbourhood Plan pursuant to the New Neighbourhoods section (Part II-2-11) of the OCP.

PLANNING PROCESS STATUS

Land within the planning process can be grouped into six categories in terms of status. Each of these categories will be explained below in order of completeness:

1. Urban Built – This category consists of existing homes and the planning process is complete.
2. Urban Zoning and Subdivision – Urban zoning is in place and the property owner has submitted a subdivision application. Properties with this status will not have a net area determined through Stage 1 of Neighbourhood Plan.
3. Urban Zoning – Urban zoning is in place. Properties with this status may have a net area determined through Stage 1 of Neighbourhood Plan.
4. Transitional Policy Applications – These are rezoning applications which were submitted prior to April 4, 2016 and were given the ability to move forward, but work with the neighbourhood planning process as they were submitted prior to the adoption of the updated OCP. Properties in this category will have a net area determined through Stage 1 of the Neighbourhood Plan.
5. NP Planning Process – Lands in this category will require a net area to be determined, as they require a Neighbourhood Plan be in place in order to facilitate urban development.
6. City-Owned Land – Land owned by the City of Abbotsford.



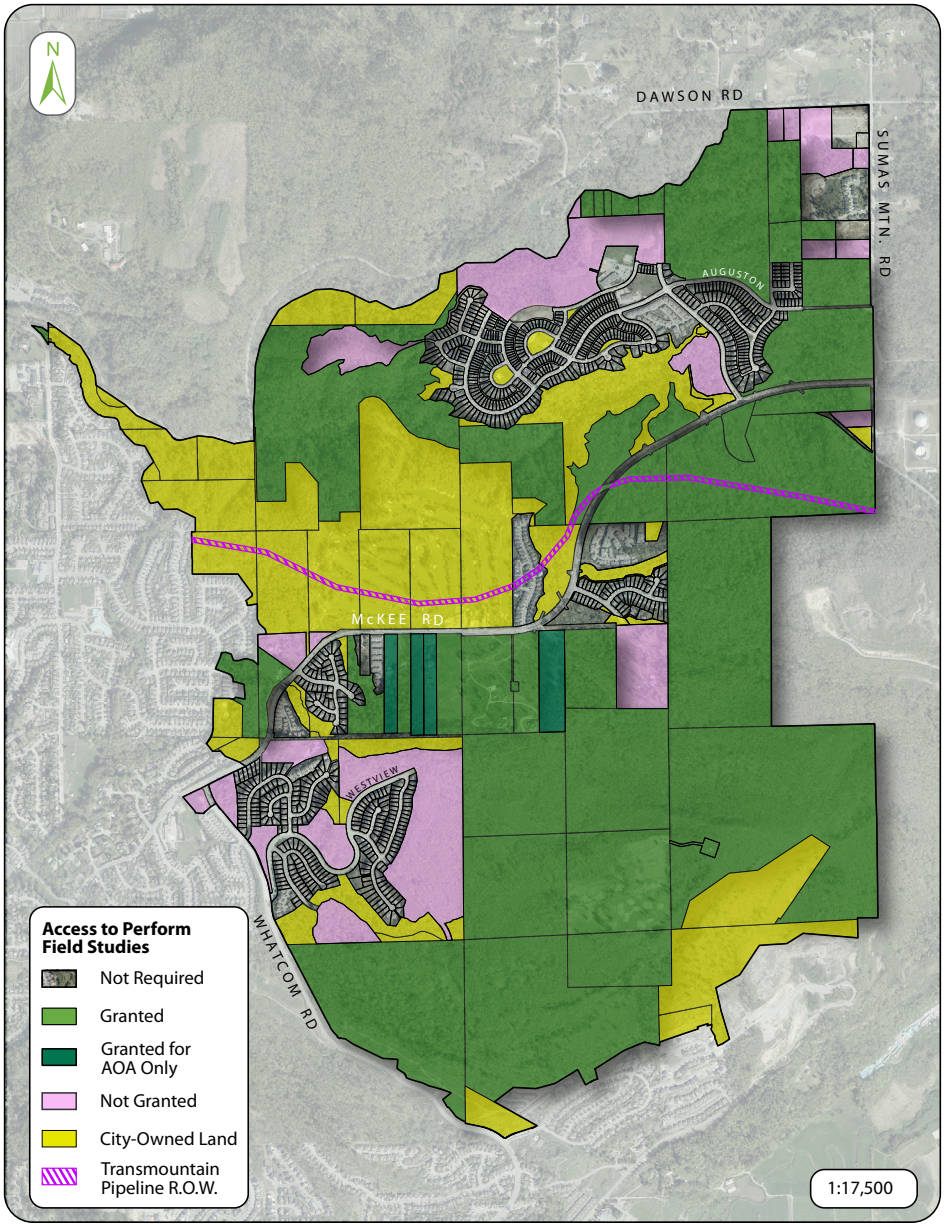
Map 5. Planning Stages

PROPERTY ACCESS

In order to conduct the necessary field studies required to determine a net area, permission had to be granted from landowners within the plan boundary. At a series of introductory meetings held in the spring of 2017, staff introduced the McKee Neighbourhood Plan as well as its planning process. At this meeting Stage 1 work was explained and landowners were asked to provide access to their land, in order to allow the following studies to be conducted:

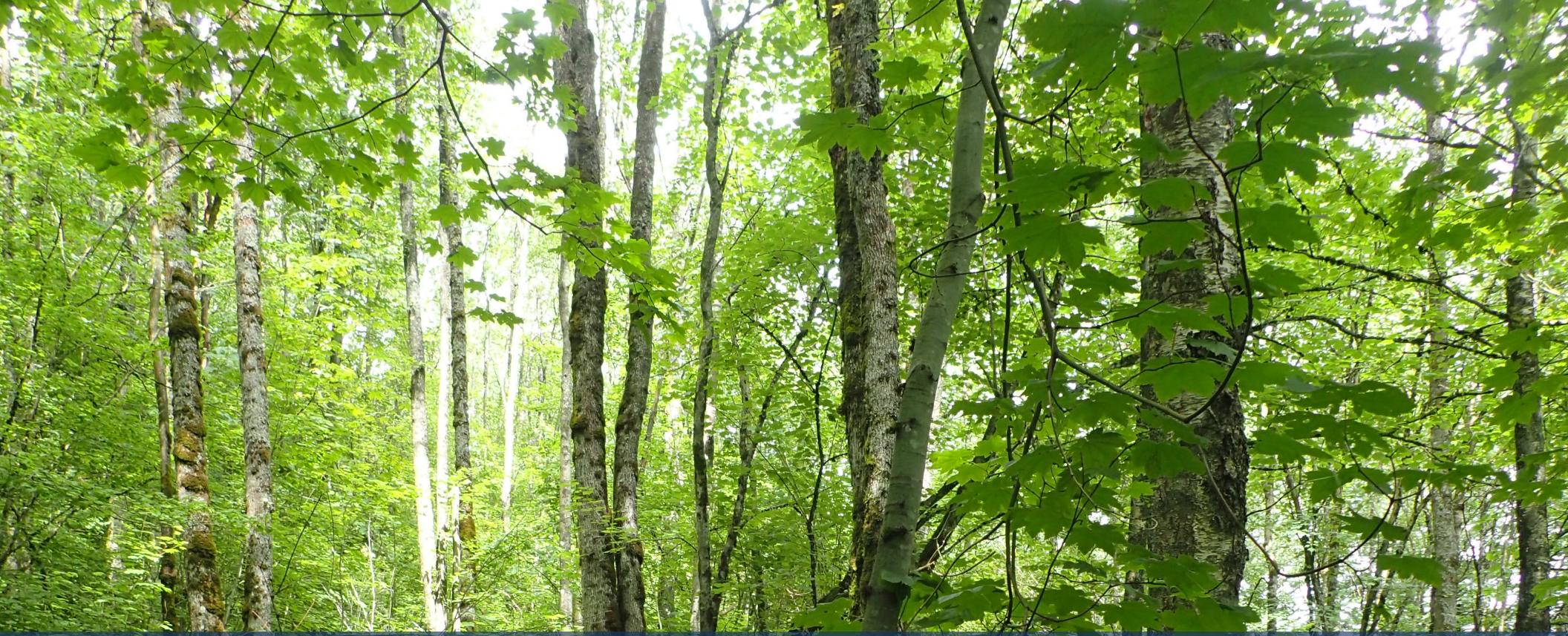
- Geotechnical Overview Assessment
- Watercourse (Riparian) Classification Assessment
- Wildlife Habitat Assessment
- Archaeological Overview Assessment

Map 6 illustrates the properties where consultants were granted access to perform the necessary field studies. City owned land was also included in the work, and consultants were provided access to these lands.



Map 6. Property Access





2.0 Environmental

Three environmental categories were analyzed. These categories are derived from the OCP and focus on retaining natural landforms, protecting riparian habitat, and protecting terrestrial habitat. Another important consideration within the OCP is the further protective measures provided by Development Permit Areas. The McKee NP is located within the Natural Environment Development Permit Area as well as the Steep Slope Development Permit Area. The guidelines for these areas protect the environment, its ecosystems and biological diversity, as well as protect development from hazardous conditions. The three environmental categories that were analyzed are Geotechnical, Water Courses and Riparian Areas, and Habitat for Species at Risk.

2.1 Geotechnical

A Geotechnical Overview Assessment was conducted to gain an understanding of the suitability of the land for urban development. This was completed through terrain stability mapping using LiDAR contour mapping and historical air photographs, in conjunction with field checking. Due to the mountainous topography several geotechnical hazards are present within the MNP area, which include but are not limited to:

- Steep terrain with unstable slopes and rockfall hazards throughout the study area, particularly in the McKee Peak and Auguston neighbourhoods.
- Creeks with associated ravine slopes, which create the potential for debris flood and debris flow events and unstable ravine slopes, primarily in the Auguston and Ledgeview neighbourhoods.
- Earthquakes which create the potential for slope destabilization leading to landslides (including debris slides and rockfall), slope displacement and liquefaction.

Due to these hazards unstable and potentially unstable terrain has been identified and mapped. To further support development suitability in the plan area, crest and toe of unstable and potentially unstable terrain was identified, and geotechnical setbacks were developed to help guide future development within the neighbourhoods.

TERRAIN STABILITY

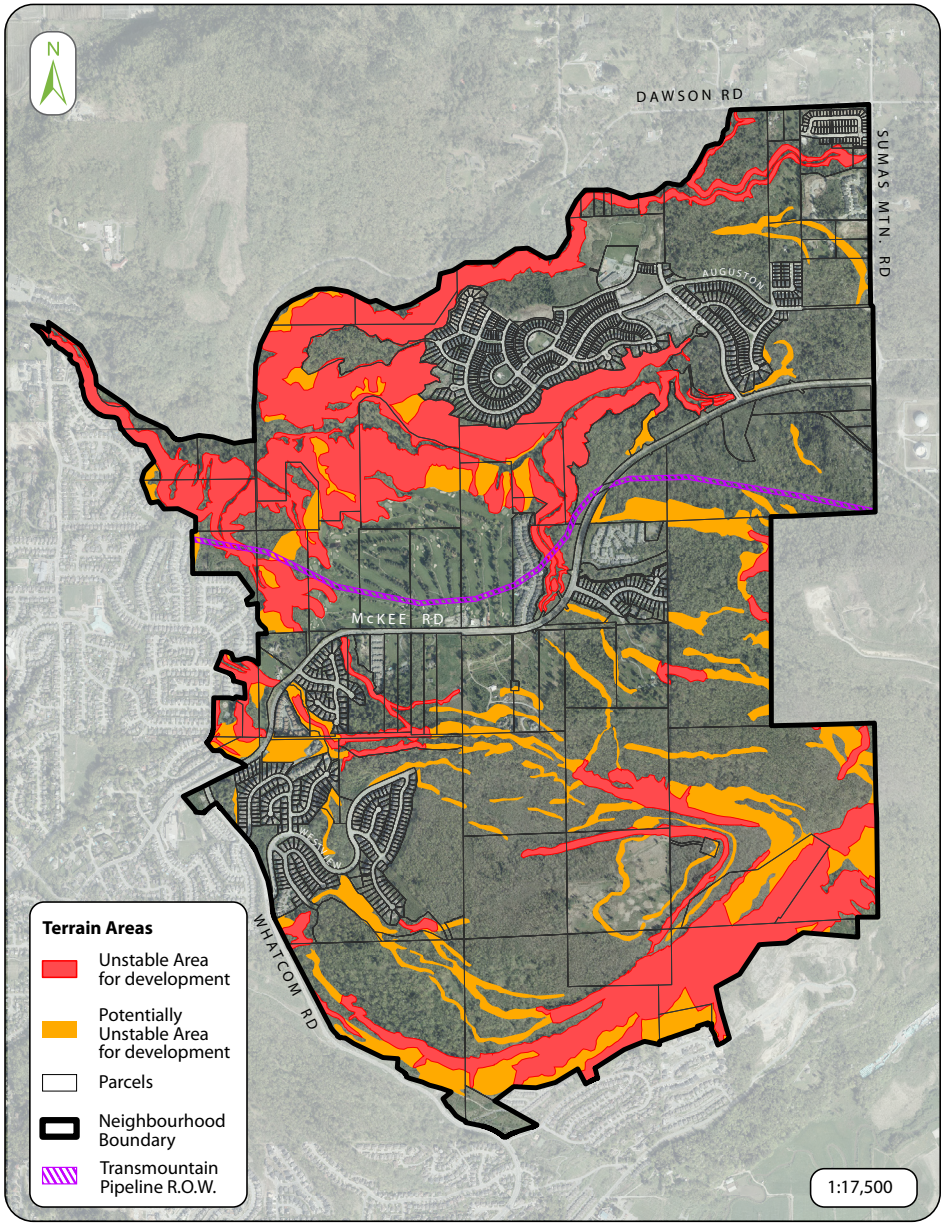
Terrain stability relates to gravitationally-induced mass movements (i.e. landslides). Slumps, slides, debris flows, and earthflows are some examples of landslides. The method for assigning terrain stability classes followed the provincial standard used in the forest industry for reconnaissance terrain stability mapping. Each mapped polygon was assigned one of three classes, Stable (S), Potentially Unstable (P), and Unstable (U). The classes indicate the likelihood of instability resulting from development activities that occur in the upper few metres of the land surface within existing surficial materials and bedrock. The general guidelines used to determine terrain stability class ratings are based primarily on slope gradient, surficial material type and texture, and the presence of geomorphological processes. In addition, professional judgement was used by the geotechnical engineering team, in applying the criteria on a polygon by polygon basis.

When using terrain stability ratings it is important to note that conditions are locally variable. Ratings indicate the professional's judgement regarding the typical conditions for each terrain polygon, but locally steeper slopes, wetter slopes, emergence of water from seepage zones, and fine-grained materials give rise to areas that are potentially more unstable than their surroundings. Consequently, persons planning field marking and constructing roads and other excavations should recognize and take into account the local geotechnical conditions. The run-out and depositions zone of potential slides in terrain below potentially unstable and unstable terrain should be carefully assessed, especially where there is a risk to human life, infrastructure, property or resource values. The table below outlines the definitions for the likelihood of occurrence ratings used for this assessment and is based on Wise et al. (2004). This assumes that landslides are independent and are not dependent on the occurrence of previous events.

Figure 4. Qualitative Probabilities of Occurrence

Terrain Stability Class	Likelihood of Occurrence Rating	Qualitative Description
S – Stable	Low	Likelihood of a landslide is remote.
P – Potentially Unstable	Moderate	Likelihood of a landslide is possible.
U - Unstable	High	Likelihood of a landslide is probable.

Map 7 illustrates the terrain stability class areas (polygons) within the plan. For clarity and legibility of the Terrain Stability map, Stable Areas for development have been assumed as everything not shown in yellow (Potentially Unstable Area for development) and red (Unstable Area for development).



Map 7. Terrain Stability

SLOPE CREST AND TOE FEATURES

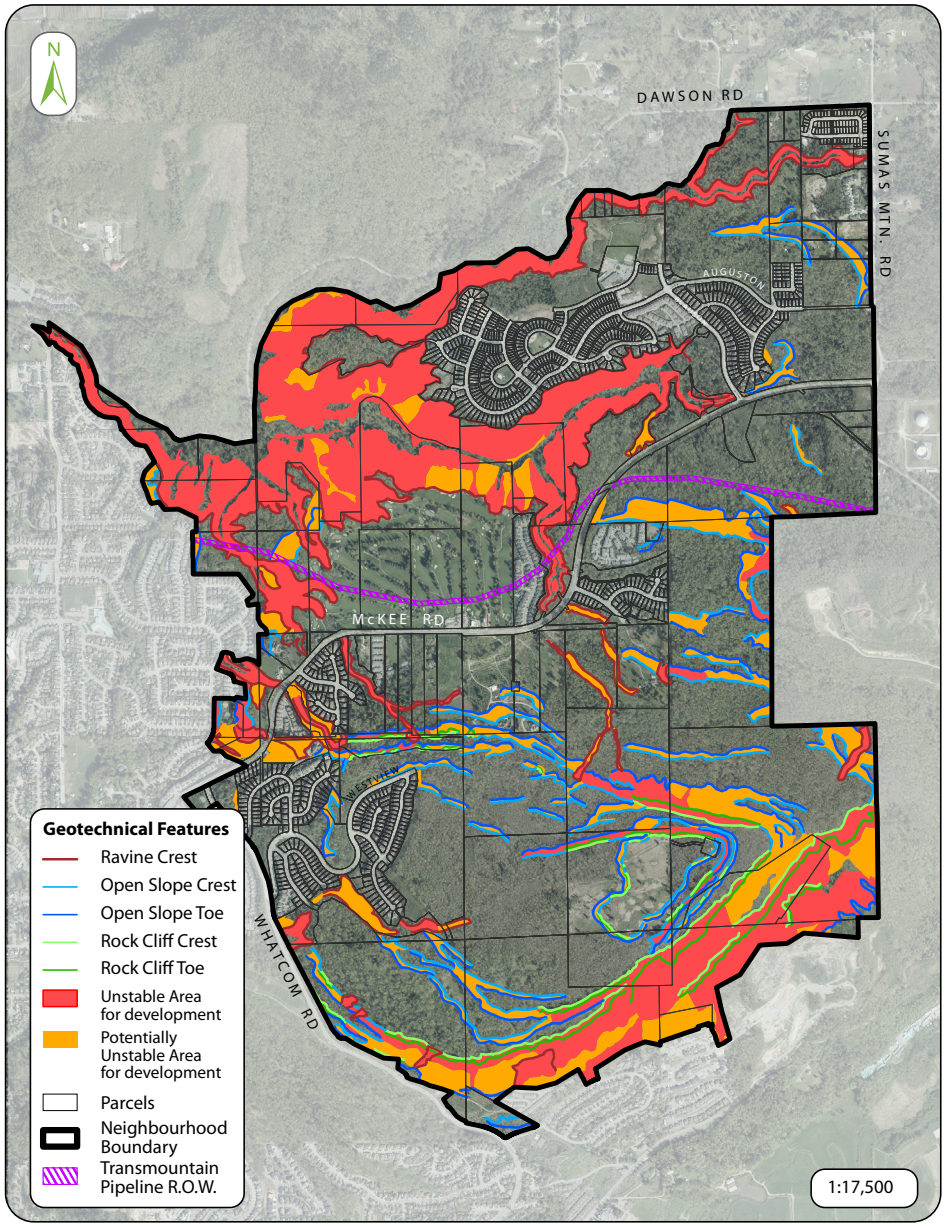
One of the key considerations for determining the suitability of land to be developed within the plan area was to ensure that development setbacks were established from crest (top edge of slope) and toe (base of slope) of steep slopes. It is well documented that these are areas of geotechnical risk to human life, infrastructure, and property. In order to establish setbacks for development, it was important to identify the crest and toes of steep slopes. The open slopes crest and toes, ravine outlines, crests of bedrock cliffs and base of rock cliffs were mapped in ArcMap using a combination of the hillshade created from LiDAR, a percent slope map derived from LiDAR, the terrain stability mapping and field work. See Map 8, for an illustration of the identified and mapped crest and toes of steep slopes within the McKee NP.

SLOPE HAZARD AREA

Map 9 (Geotechnical Hazard Areas) illustrates the extent of the findings that were identified during the Geotechnical Overview Assessment. The terrain stability polygons and their geotechnical setbacks (identified as Geotechnical Risk Area in Map 9) are intended to support the neighbourhood planning process and provide preliminary direction and help determine a net area. A more detailed level of effort will be required to estimate the hazard level associated with site specific development applications.

- The Terrain stability polygons and their geotechnical setbacks should be used as a preliminary guideline as follows: Stable/No Apparent Hazard Areas (areas with no polygons) – Geotechnical assessment should be conducted based on the location within the Steep Slope Development Permit Area.

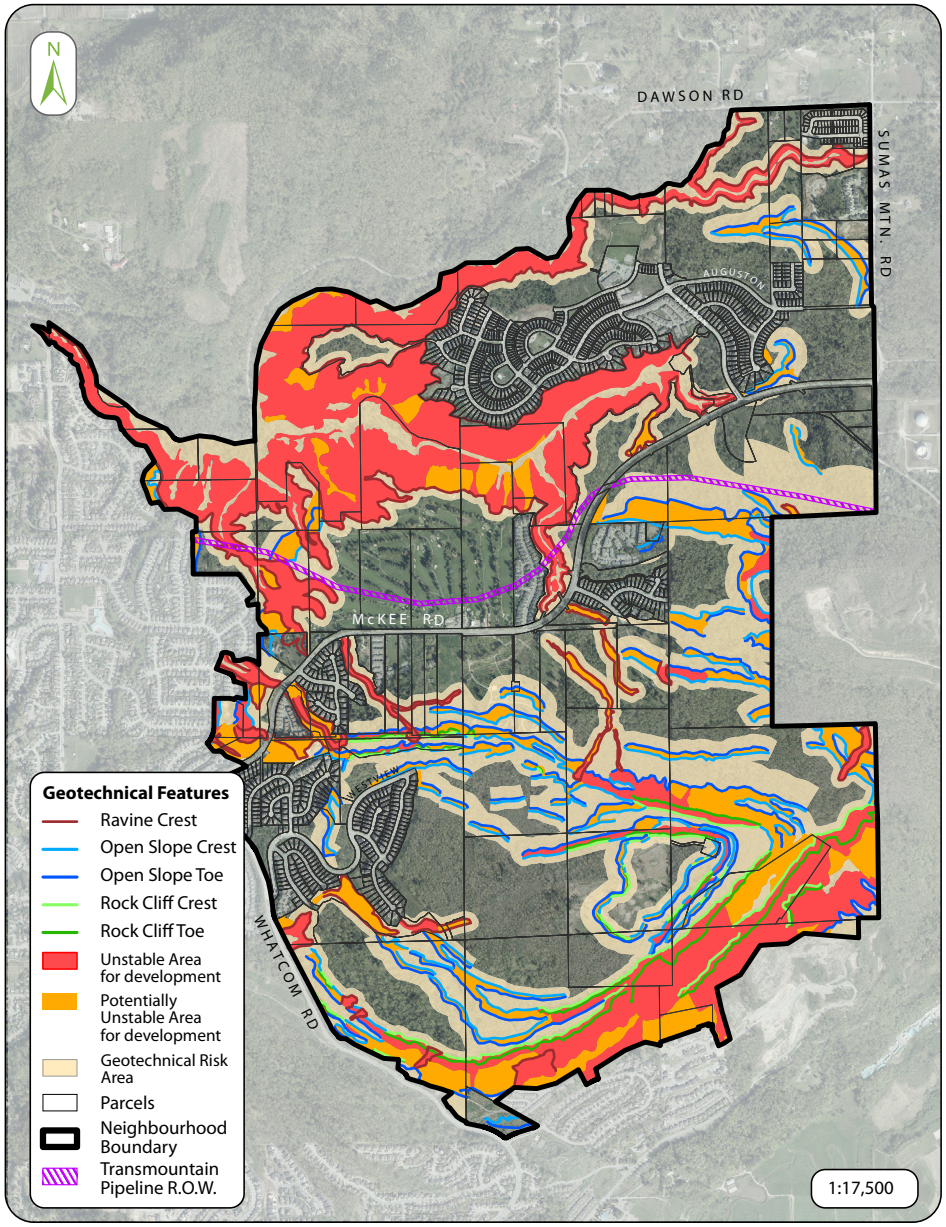
- Potentially Unstable Areas (Yellow Polygons) – These polygons are potentially unstable and are not recommended for residential development. However, detailed geotechnical assessments could be conducted to further define the geotechnical hazard and provide mitigative measures/geotechnical setbacks to possibly develop these polygons. The geotechnical setbacks (tan colour area) adjacent to the Potentially Unstable Area polygons could also be developed if a site specific geotechnical assessment is completed to reduce the geotechnical setback.



Map 8. Slope Crest and Toe Features

- Unstable Areas (Red Polygons) – These polygons are unstable and residential development is not recommended by the geotechnical engineer. However, the geotechnical setbacks (tan colour area) adjacent to the Unstable Area polygons could potentially be developed if a site specific geotechnical assessment is completed to reduce the geotechnical setback.

The Geotechnical Risk Area has been established to delineate the setbacks for each toe and crest illustrated on Map 9. Setbacks for Crests range from 20 metres to 50 metres, while toe setbacks range from 50 to 200 metres, as extra distance is needed is some cases for runout zones.



Map 9. Geotechnical Hazard Areas

2.2 Watercourses and Riparian Areas

A review of the watercourses and riparian areas within the plan boundary was conducted to identify watercourses and riparian areas under the Water Sustainability Act, and the Streamside Protection Bylaw No. 1465, 2005.

The consulting team was tasked with completing a GIS based analysis and terrain modeling to identify ravine conditions with direct association with mapped watercourses to classify ravine morphology, model top-of-bank, and define point of origins for streamside protection and enhancement area setbacks. A field based watercourse quality assurance review was then completed to refine mapping and classifications. The consultant then identified and mapped preliminary streamside protection area buffer requirements pursuant to the Streamside Protection Bylaw. Previously conducted reviews of watercourses and riparian areas by the consultant within the McKee Peak Neighbourhood were utilized within this assessment, as they were conducted recently and at the same level of detail.

TERRAIN RESOURCE ASSESSMENT

The GIS based terrain model informed the delineation of major ravine boundaries. The delineation of ravine top-of-bank is a critical boundary as the top-of-bank conditions dictate the origin of streamside protection and enhancement area setbacks. The ravine conditions define an important legal distinction as 'ravine' slopes are considered as a component of stream channel under the Water Sustainability Act, despite the potentially significant separation of the steep slopes from the bankfull edge of the parent stream channel.

The determination of ravine morphology is also important in the interpretation of 'large ravines' which are defined as ravines greater than 60 metres in width. Large ravines receive consideration of 10 metre setbacks from the top of ravine bank, rather than the typical 15 or 30 metre setbacks based on stream channel permanence and fish bearing status. Generally, the large ravines applicable to the McKee Neighbourhood Plan include the mainstem portions of Clayburn Creek and Dianne Brook; however, segments of some tributary ravines were assessed by GIS analysis to be greater than 60 metres wide.

For the purposes of modeling streamside protection and enhancement area setbacks pursuant to the Streamside Protection Bylaw, preliminary interpretation of ravine top-of-bank widths have been completed to define breaks between 10 metre setbacks and typical bylaw setback requirements of 15-30 metres depending on stream classification.

WATERCOURSE FIELD ASSESSMENT AND CLASSIFICATIONS

A field review was completed to assess the physical characteristics and indicators of hydrologic process associated with SHIM watercourse features within the plan area. The assessment was completed to expand upon prior reviews of SHIM drainage features which were completed by the consultant within the McKee Peak area.

Lands within the plan south and east from the prior study areas within the McKee Peak area were not assessed in detail on the results of the GIS based terrain analysis confirming the watercourse's association with prohibitively steep slopes and the presence of a BC Hydro right-of-way, both of which will preclude future development potential. Interpretation of stream segment attribute information within the original digital datasets coupled with interpretation of orthophotos and terrain analysis informs recommended classifications for the purposes of mapping and preliminary setback analysis.

Watercourses within major ravine features (e.g. Clayburn and Poignant Creek mainstem ravine) were not directly assessed. Tributaries within the parent ravine segments are assumed to be present based on interpretation of hillslope geomorphology and professional experience. Any ravine side-slope tributaries present or not, would be completely regulated under the Water Sustainability Act on the merits of the contiguous steep slope conditions extending from the mainstem watercourse, and the ravine channel itself included in the legal definition of 'stream'.

Beyond the major ravine features, generally the significance of natural stream channels within minor gully features or as evidenced by LiDAR derived topography was generally confirmed through the field assessment. However, multiple drainage features identified in the SHIM dataset as 'ephemeral' were assessed and yielded no evidence of hydro-geomorphic process or where minor surface expressions of runoff associated with historic hillslope modifications associated with

logging, mining, or recreational access corridors (e.g. trails).
The consultant completed a re-assessment of multiple drainage features under both summer and fall/winter conditions to ensure that the interpretations of 'no visible channel' and associated mapping refinements were indeed representative of typical seasonal hillslope hydrologic conditions. Notwithstanding the proposed refinements to the SHIM dataset as it relates to the extent of formally regulated stream channels and the associated riparian area setbacks, it is important to note that the full extent of the original SHIM mapping provided valuable information for the identification of local catchment area boundaries and important headwater management areas.

Field assessments throughout the remainder of the plan area were completed to interpret evidence of defined stream channels or evidence of hydro-geomorphic presence in support of watercourse classifications.

PRELIMINARY SPEA SETBACKS

Setback recommendations for Streamside Protection and Enhancement Area (SPEA) setbacks are driven by the interpretation of watercourse permanence, with the fish bearing status of the study area watercourses, based on available municipal mapping, limited to mainstem portions of Clayburn Creek and Dianne Brook within their parent ravine features and generally north of the McKee Road alignment. Future removals of man-made barriers may yield additional fish access upstream of McKee Road. Fish distribution assessments and confirmation of presence/absence was not included within the scope of this assessment. Future environmental assessments in support of development applications with an interface with permanent and non-permanent streams are recommended to refine riparian setback requirements.

Preliminary setbacks are defined as 15 or 30 metres from a given watercourse top-of-bank. Owing to the resolution of the study area's spatial datasets, top-of-bank conditions have been interpreted from LiDAR datasets and delineation of ravine boundaries or watercourse mapping centerline as a proxy for bankfull width for unconfined watercourses.



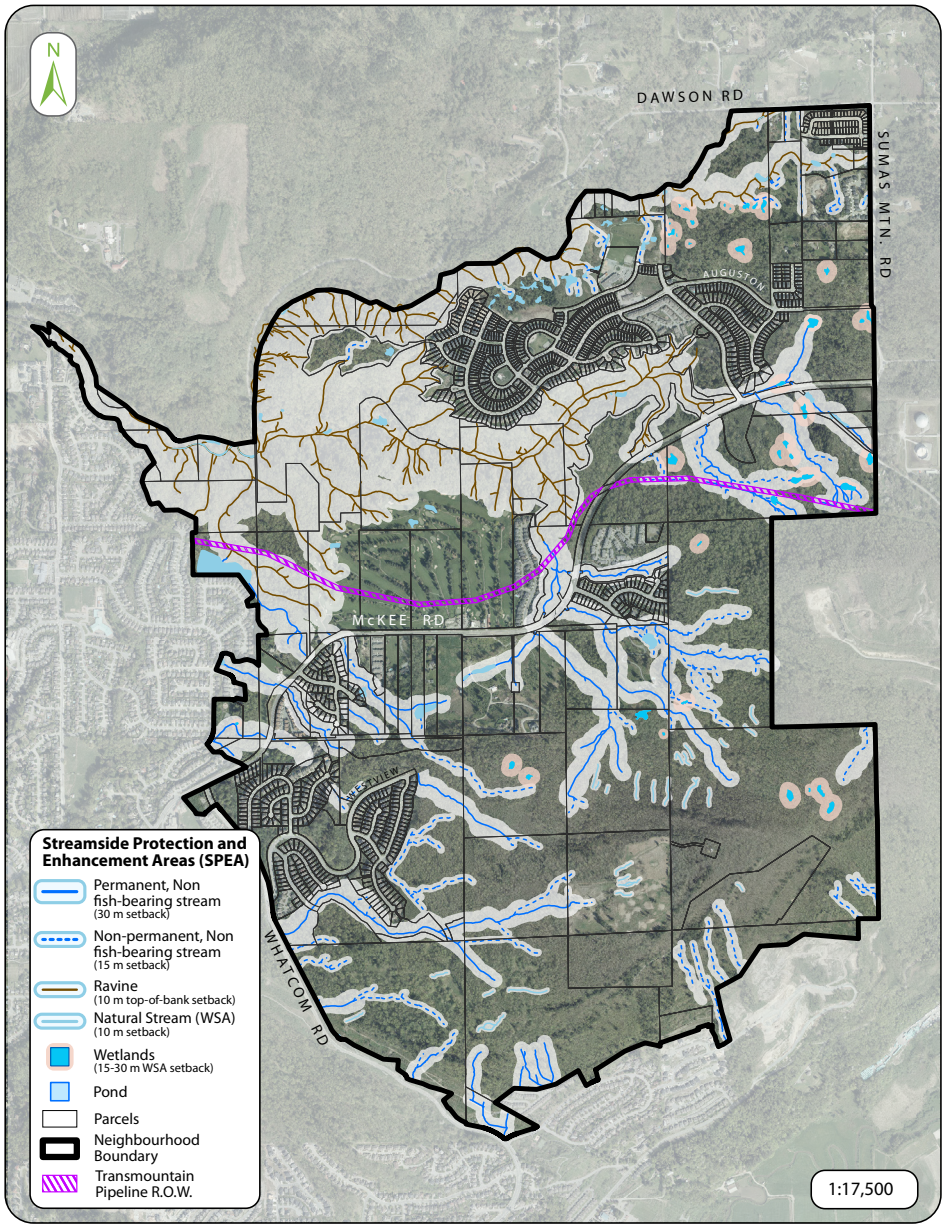
Significant portions of the study area include major ravine segments of Clayburn Creek and Dianne Brook. GIS analysis of ravine top-of-bank and interpretation of average ravine widths has been completed to inform SPEA setback requirements for both large and small ravines pursuant to Section 4(c) and (d) of the Streamside Protection Bylaw.

The setbacks presented within this document are preliminary in nature and are intended for neighbourhood planning purposes. Future detailed development planning will require formal assessments of aquatic habitat conditions to verify watercourse permanence, potential fish bearing status, the presence or absence of active floodplain conditions, field delineation of appropriate top-of-bank boundaries to inform setback requirements, and potential presence of unmapped wetland habitat features.

Map 10 illustrates the McKee NP riparian area based on the interpretation of the watercourse classifications and ravine boundaries as presented within this section. SPEA setbacks are modeled based on the recommended watercourse classifications and exclude consideration of drainage features recommended for classification as 'non-fish habitat'. Similarly, natural watercourses identified as streams, but without surface connectivity to downstream fish habitat are excluded from consideration of SPEA setbacks.

Section 5 of the Streamside Protection Bylaw requires consideration of SPEA setbacks for man-made ditches. Ditches may be present within the study area. Consideration of distinction between ditches with no natural headwaters versus channelized streams is beyond the scope of this assessment. Future detailed assessments for site specific development applications may include assessments of ditches to refine preliminary SPEA setbacks as presented within this report.

Headwater ponds confirmed to provide direct water supply to connected ecosystems require SPEA setbacks consistent with the Streamside Protection Bylaw. While isolated ponds or wetland habitats would not typically require the establishment of SPEA setbacks, they do require protection under the provincial *Water Sustainability Act.*



Map 10. Riparian Areas

2.3 Species at Risk/Wildlife

The work conducted for this component of the report includes a review of adjacent source wildlife populations, previously identified habitat hubs, previously identified priority habitat linkages, and includes analysis of terrain and ecosystem features. Consideration of topographic conditions, watercourses and riparian habitats inform the identification of landscape level wildlife linkage opportunities for the Neighbourhood Plan area to provide opportunities for wildlife migration around or through future development areas.

The mixture of terrain constraints (i.e. steep slopes), watercourses, riparian setback areas, and logical wildlife habitat linkages is intended to further inform neighbourhood level land use planning and define critical environmentally sensitive areas requiring detailed consideration for protection, enhancement, or mitigation measures associated with future development activities.

Owing to the scale of the study area, the wildlife habitat assessment is that of an overview assessment and informed by the interpretation of historical wildlife occurrence records and field verification of habitat suitability for key 'umbrella' species (species which require the greatest extent of habitat for survival and therefore provide suitable habitat for most other species); notably, Mountain Beaver and Red-legged Frog.

An overview report summarizing wildlife occurrences and wildlife habitats within the Plan area was commissioned by the Fraser Valley Conservancy (FVC) in 2017. The FVC report provides an independent review of wildlife habitat values and species at risk considerations. The FVC report is qualified with a statement confirming that the report is not considered a comprehensive inventory and data has not been confirmed by field surveys.

The consulting team did complete field surveys to validate historical occurrence records and verify the validity of habitat suitability and support the presence/absence of wildlife species throughout the study area. Incidental observations were recorded through the conduct of the watercourse field assessments and specific wildlife transect surveys were completed.

FRASER VALLEY CONSERVACY REPORT

The report highlights that riparian corridors are highly productive and provide crucial habitat and that their integrity is critical to landscape level physical and ecological processes. The riparian corridors are primary movement corridors for water, nutrients and species through the landscape and provide an integral connection within the watersheds as well as the nearby Sumas Mountain ecosystem.

The FVC report asserts that habitat connectivity is essential to maintaining healthy wildlife populations in addition to the survival of species at risk, and should be maintained as much as possible through development.

The McKee NP area is confirmed to include designated critical habitat for Pacific Water Shrew and Oregon Forest Snail, and proposed critical habitat areas for Townsend's Mole.

WILDLIFE AND WILDLIFE HABITAT ASSESSMENT

A number of species located within the McKee NP are protected by the federal government through the *Species at Risk Act* (SARA). Provincial protection is also in place for species at risk, through Best Management Practices (BMP's). Both federal legislation and provincial BMP's provide guidance for protecting critical habitat required to protect species at risk.

The consulting team completed a review of available Province of BC and municipal wildlife occurrence datasets and completed overview level field assessments of the McKee NP study area. GIS analysis confirms the interpretations include high value wildlife habitat for a number of species as defined by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and the Province of BC's Conservation Data Centre (CDC).

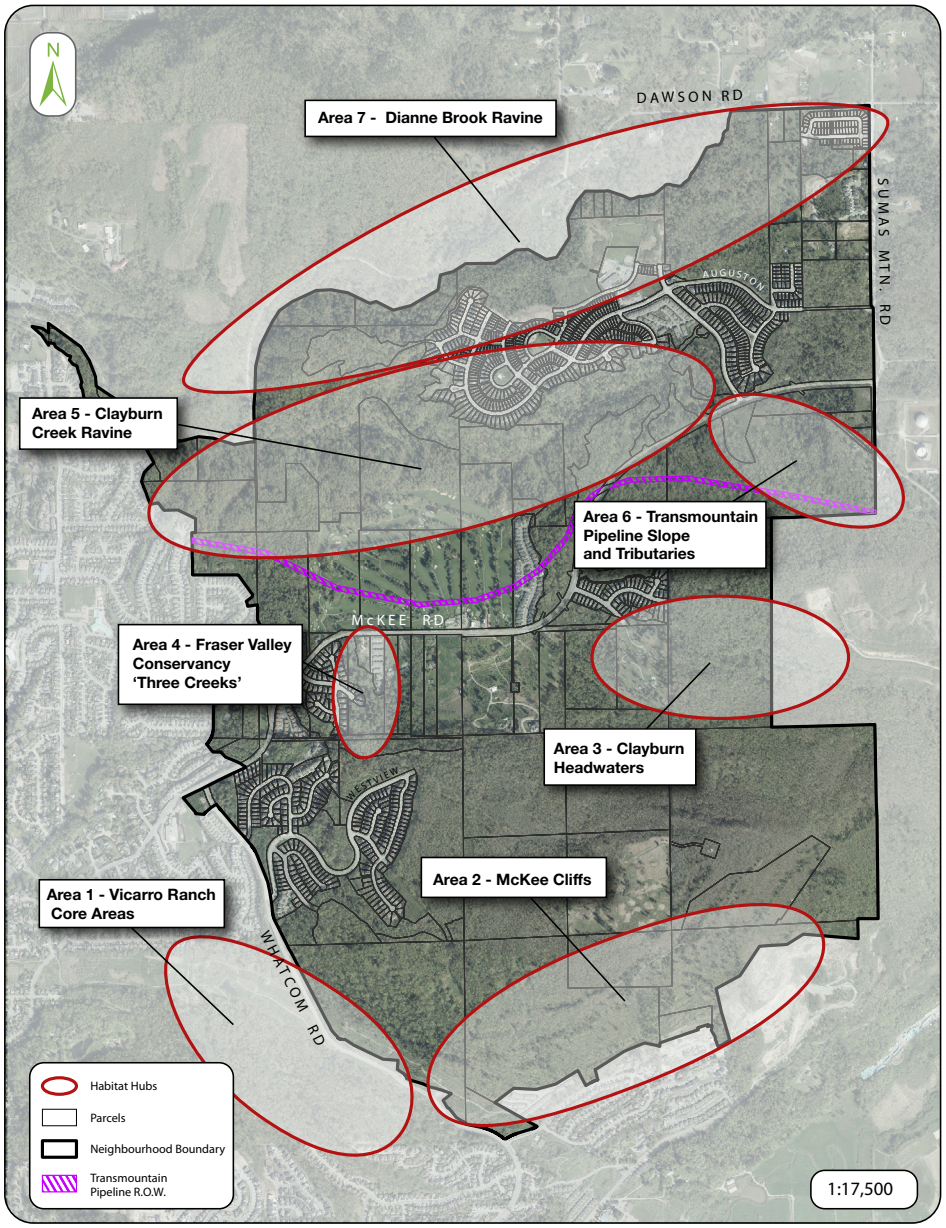
Field level encounter surveys were conducted in 2017 to assess for wildlife and wildlife habitat suitability. Oregon Forest Snail, Pacific Sideband, Northern Red-legged Frog, Mountain Beaver and Pacific Waterleaf occurrences were all encountered throughout the Neighbourhood Plan area.

Suitable habitat for Pacific Water Shrew was confirmed within a number of well-defined watercourses and ravine areas exhibiting perennial flows, suitable cover, and significant contiguous occurrences of skunk cabbage and other wetland plant species. Confirmation of active Mountain Beaver burrows associated with both permanent and non-permanent watercourses confirmed active habitat use and high suitability for this federally listed species. Ample observations of both Oregon Forest Snail and shells coupled with predominance of Big Leaf Maple and Stinging Nettle plants confirms the abundant suitability for listed gastropods within mature forested areas of the McKee NP.

The timing of the environmental consultant's field surveys and the prevailing dry weather through the summer of 2017 yielded sub-optimal conditions for assessing critical Red-legged Frog habitats. Generally pond or wetland features illustrated by SHIM mapping were dry at the time of the surveys. Additional field assessment of wetland habitats were conducted during the spring of 2018 to evaluate hydrologic conditions, the recurrence of saturation and Red-legged frog breeding habitat value within the Neighbourhood Plan area. Medium to high suitability breeding habitat for Red-legged frog was confirmed within a number of pond and wetland features. In addition, incidental encounters of juvenile and adult Red-legged Frogs within the Plan area confirms the habitat suitability and function of the riparian areas as critical habitat corridors and strongly support that wetland features provide breeding habitat functions.

Prior occurrence records for a number of SARA Schedule 1 species including Western Painted Turtle and Peregrine Falcon have been documented within the plan boundary. A recovery strategy has been released for Western Painted Turtle which includes proposed critical habitat areas within the McKee NP area.

Occurrence records are supplemented with 2017 observations to support the development of priority wildlife linkages beyond previous work that was completed by the environmental consultant within areas of the neighbourhood plan, and supports linkages throughout the entire plan area.



Map 11. Habitat Hubs

2.4 Wildlife Linkages/Corridors

The objective of the wildlife linkage analysis is to identify important populations or suitable habitat areas and endeavor to maintain landscape connectivity. Linkages will naturally follow designated watercourses and their associated riparian corridors, and the preliminary SPEA setbacks define key opportunities for wildlife movement through contiguous vegetated corridors. Riparian areas provide key linkages based on the protections afforded through senior government regulation (e.g. SARA) and protections under the Streamside Protection Bylaw.

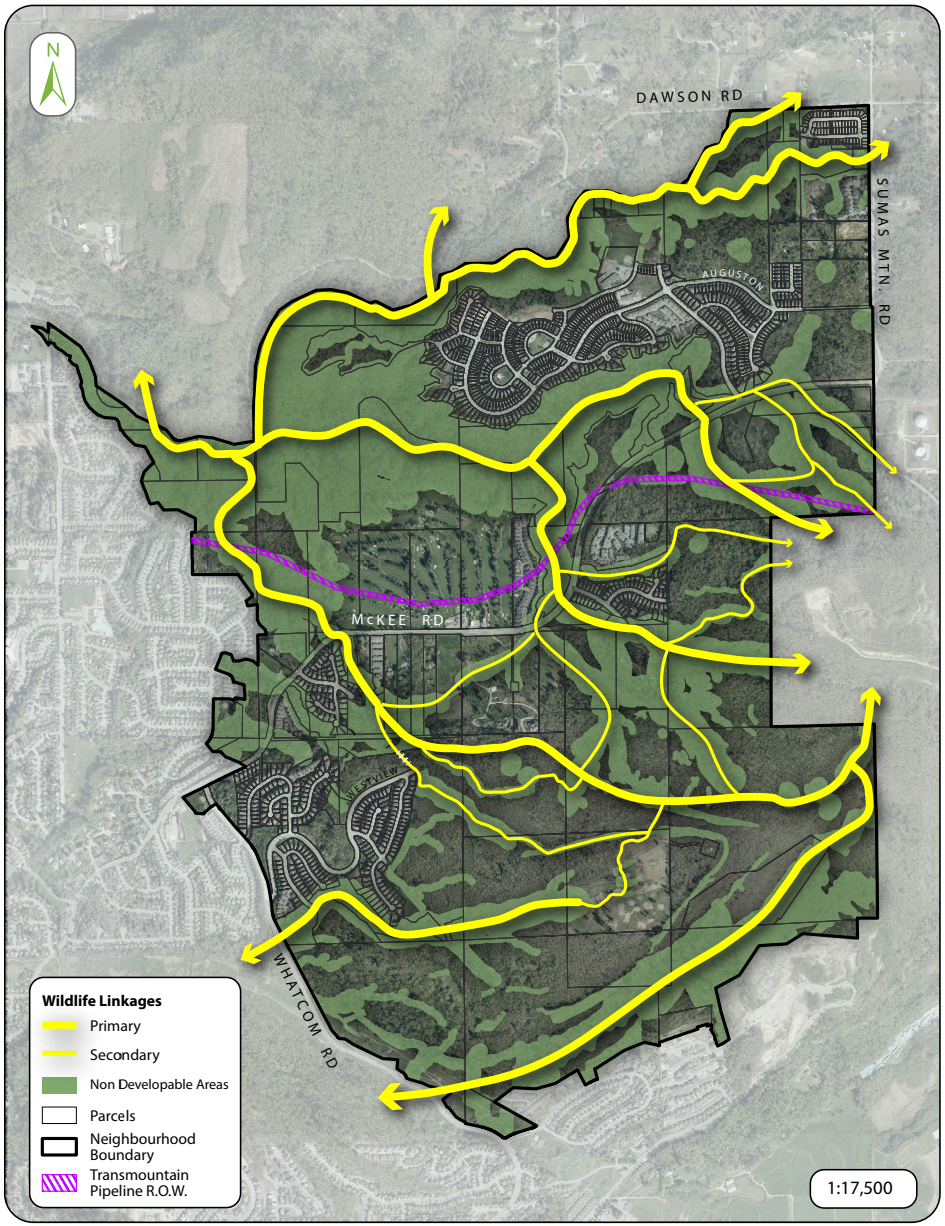
Consideration of steep slope conditions that would be otherwise unsuitable for development provide de-facto extensions of possible habitat linkages and provide further opportunities for upland forest habitat connections.

For the purposes of the McKee NP, linkage planning has been limited to consideration of the connection of obvious habitat hubs and offsite core habitats within the immediate vicinity (see Map 11). Movement corridors include consideration of aquatic and riparian habitats, headwater management zones, and wetland habitats providing amphibian breeding potential.

Based on the historic wildlife occurrence records and habitat assessment analysis the following key habitat hubs inform the development of priority linkages:

- Area 1 - Vicarro Ranch Core Areas
- Area 2 - McKee Cliffs
- Area 3 - Clayburn Headwaters
- Area 4 - Fraser Valley Conservancy ‘Three Creeks’
- Area 5 - Clayburn Creek Ravine
- Area 6 - Transmountain Pipeline Slope and Tributaries
- Area 7 - Dianne Brook Ravine

Recommended primary linkages for consideration within the McKee Neighbourhood Plan are illustrated for key connections between habitat hub or core areas and typically are associated with major ravines and permanent streams providing critical habitat for species at risk (see Map 12). Secondary linkages have been typically recommended based on



Map 12. Wildlife Linkages

consideration of steep slopes, permanent streams and maintenance of intact forested connections that would assist with movement between populations of wildlife around future development areas.

PHANTOM ORCHID

Phantom Orchids are considered a SARA schedule 1 species, COSEWIC endangered species, and provincially red listed species. The Phantom Orchid is a rare plant with poorly understood association between fungus and a host tree, with most of the plant body located underground. In Canada, the plant distribution is limited to 22 known existing populations, with lower mainland locations limited to the lower Fraser Valley (Environment and Climate Change Canada. 2018. Recovery Strategy for the Phantom Orchid). Phantom Orchids are found within the McKee Neighbourhood Plan on the Southwest slopes of McKee Peak.

In order to protect Phantom Orchid the Federal Government has proposed protection measures for the recovery of this species at risk. A desktop determination of critical habitat was undertaken for the species by providing a 250 m buffer zone all around verified occurrence records of the species. The approximate 250 m buffer is composed of three additive components as follows:

- 5-25 m (for GPS location error)
- 50 m critical function zone (space requirements for root travel of host plant)
- 200 m (broader scale ecosystem processes needed for microhabitat conditions)

(Environment and Climate Change Canada. 2018. Recovery Strategy for the Phantom Orchid).

When the proposed protection buffer is applied within the McKee NP, a large area of otherwise potentially developable land could be rendered undevelopable (see map 13).

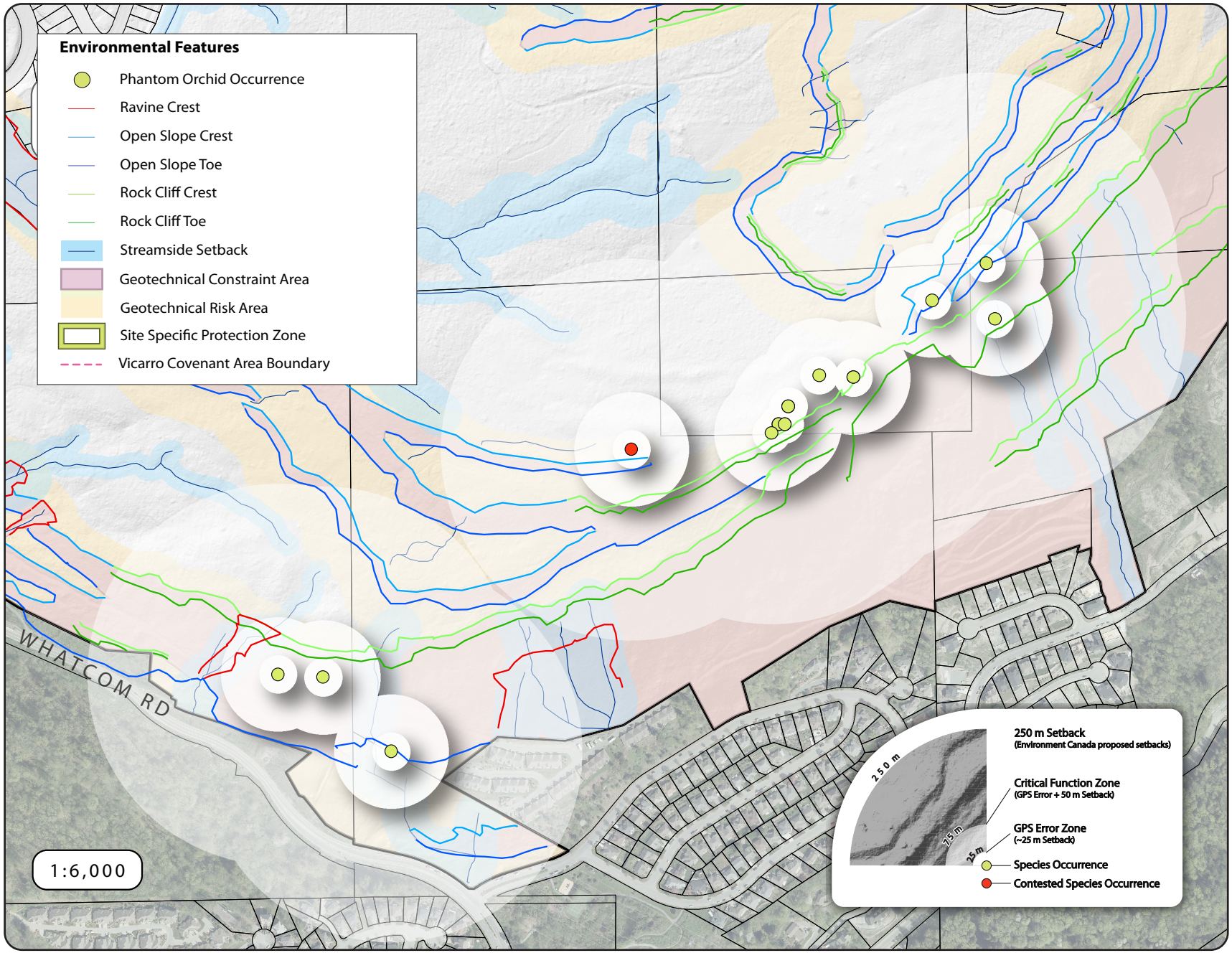
In order to pragmatically work with the proposed guidance from Environment Canada, the environmental consultant working on the Neighbourhood Plan recommended future modeling of practical buffer limits based on site specific considerations with the objective of maintaining natural hillslope hydrologic processes and interior forest conditions for the plant locations.

In July of 2018, a field survey of the Phantom Orchid's critical habitat was conducted. During this field visit, occurrence locations for this species at risk were verified, and site specific conditions were established. With a detailed understanding of the area, site specific protection zones for the Phantom Orchid plants were developed using the basis of Environment Canada's protective criteria, as well as further site specific recommendations from the consultant. As a result, each plant is provided with a similar protective buffer comprised of GPS location error, critical function, and broader scale ecosystem. However, the distances differ from Environment Canada's, as the following criteria have also been considered for each occurrence:

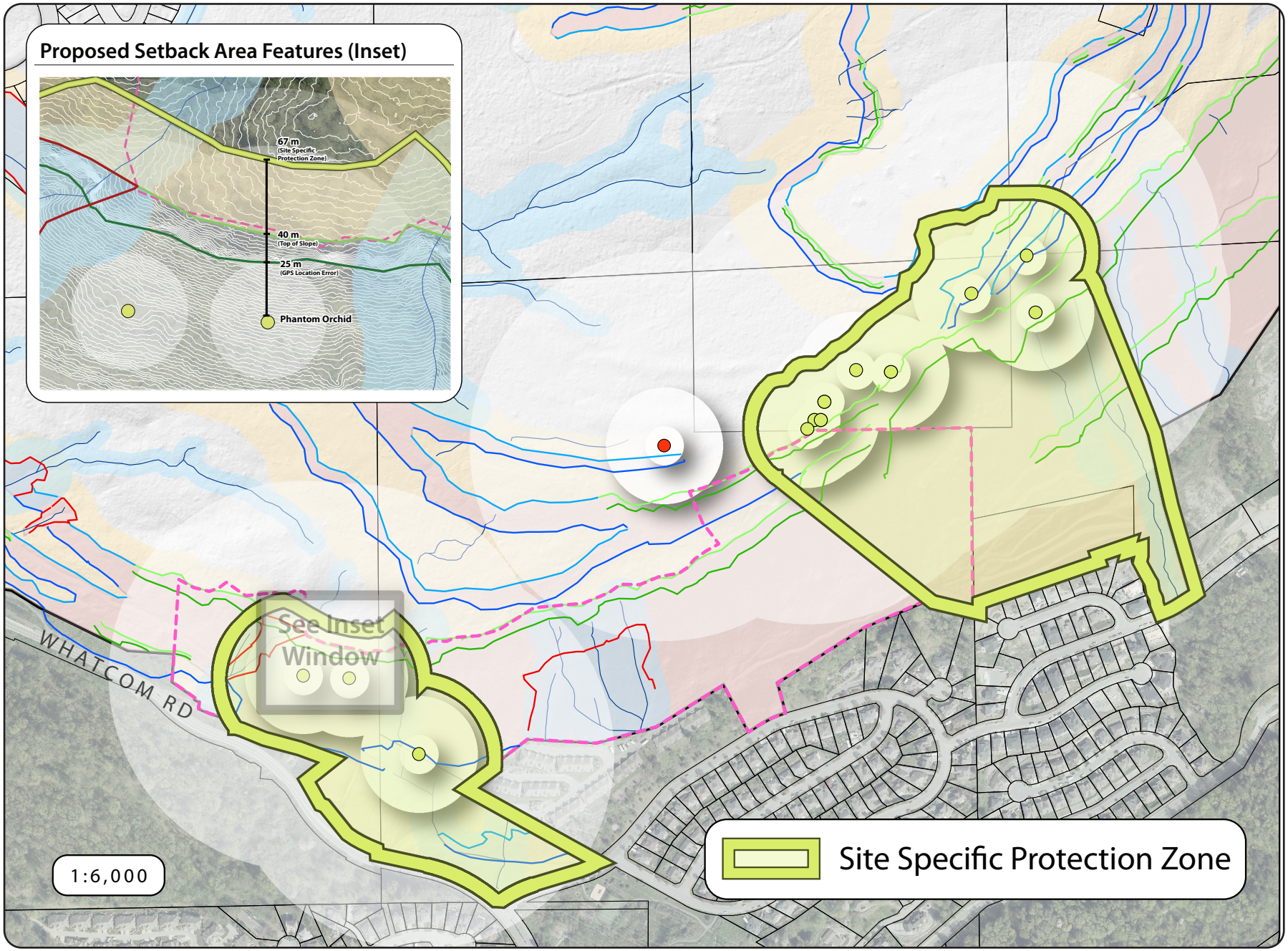
- Aspect (sun angle and slope direction)
- Forest type (mixed coniferous forest)
- Hydrology (direction of water flow)
- Windthrow (edge effect on host trees)

After mapping the site specific critical habitat buffer, the upslope protection zone for the plants ranges from approximately 37 m to 67 m. While the downslope protection zone ranges meets the recommended full extent of 250 m (See Figure 14). With the site specific critical habitat buffer mapped, the Phantom Orchid plants are provided protection that meets the intent of the Federal government guidelines, yet allows the City to meet its neighbourhood development objectives.

In February of 2019, City staff and the environmental consultant were able to meet with representatives from the Canadian Wildlife Service (CWS) of Environment and Climate Change Canada. The City's approach of pragmatically working to balance Neighbourhood development objectives and protecting critical habitat for species at risk was presented. After the presentation and ensuing post discussion, CWS staff indicated general support for the City of Abbotsford's approach.



Map 13. Phantom Orchid Existing Conditions



Map 14. Phantom Orchid Proposed Setback Areas





3.0 Archaeological and Cultural Heritage

An important component in the McKee NP planning process is to identify lands that have archaeological or cultural heritage significance. In British Columbia, all archaeological sites that are located on Provincial Crown or private land that are assumed to pre-date AD 1846 are automatically protected from damage, desecration, alteration, or excavation under the *Heritage Conservation Act* (HCA). Archaeological sites within the province are most frequently attributed to settlement and land use of Aboriginal peoples. The McKee NP is located within the asserted traditional territories of the Sumas (Sema:th), Leq'a:mel and Matsqui First Nations of the Sto:lo Nation. To ensure the archaeological and cultural heritage work was conducted under the terms and conditions established under the *Heritage Conservation Act* (HCA), the City hired an archaeological consultant who also applied for a Sto:lo Heritage Investigation Permit.

3.1 Archaeological Overview Assessment

The primary objective of the Archaeological Overview Assessment (AOA) is to describe the distribution of known and potential archaeological sites within the neighbourhood plan. There are no known archaeological sites recorded within the plan area, and no archaeological sites were altered during the study, a provincial Section 14 Heritage Inspection Permit was not required for the overview assessment. As there were no known archaeological sites located within the plan area, the consultant's task was to identify lands or landforms that have the potential to contain archaeological sites within the neighbourhood plan by conducting a Preliminary Field Reconnaissance (PFR).

TASKS

The AOA involved the following tasks:

- Application for Sto:lo Nation Heritage Investigation Permit
- Application for Seyem' Qwantlen Heritage Investigation Permit
- Meetings with Leq'a:mel, Matsqui, Sto:lo, and Sumas First Nations for an overview of the archaeological process, and to seek community involvement in project fieldwork
- Desk-based review of ethnographic and archaeological literature for the Abbotsford area
- Review of previous AOA and Archaeological Impact Assessment (AIA) reports for the area
- Search online for any documented information about the area in the Provincial Heritage Register (RAAD)
- Review of paleo-environmental, biophysical, and topographic information
- Conduct a PFR
- Follow-up meetings with Leq'a:mel, Matsqui, Sumas, and Sto:lo Nations to share findings and start discussion on outcomes
- Evaluation of archaeological resource potential within the proposed project area
- Prepare AOA report describing AOA findings and recommendations

3.2 Field Investigations: Preliminary Field Reconnaissance

The purpose of a PFR is to visually assess and inspect the surficial project area for landforms that have the potential to contain archaeological resources, and to determine if potential archaeological features (e.g. cultural depressions, artifact scatters, mounds, rock art, rock shelters, and culturally modified trees) are present.

The PFR was conducted by a crew consisting of archaeologists, and First Nations representatives from each of the local First Nations as well as a representative from Sto:lo First Nation. A City staff member accompanied the survey crew to observe and facilitate access to private properties. The primary objectives of the PFR were to: (1) evaluate potential for subsurface archaeological materials, and (2) identify surficial archaeological materials and features.

In-field archaeological potential was assessed according to site types identified during the desktop assessment. To capture areas of potential not identified by the desktop assessment, surveyors also targeted areas with the following characteristics:

- Proximity to areas of cultural significance
- Identification by First Nations representatives
- Old growth timber suitable for cultural modification
- Proximity to sheltered areas
- Slope and aspect
- Presence of large boulders or exposed bedrock with potential for rock art, habitation, or quarrying activities
- Proximity to waterways
- Elevation
- Intact pre-industrial stratigraphy

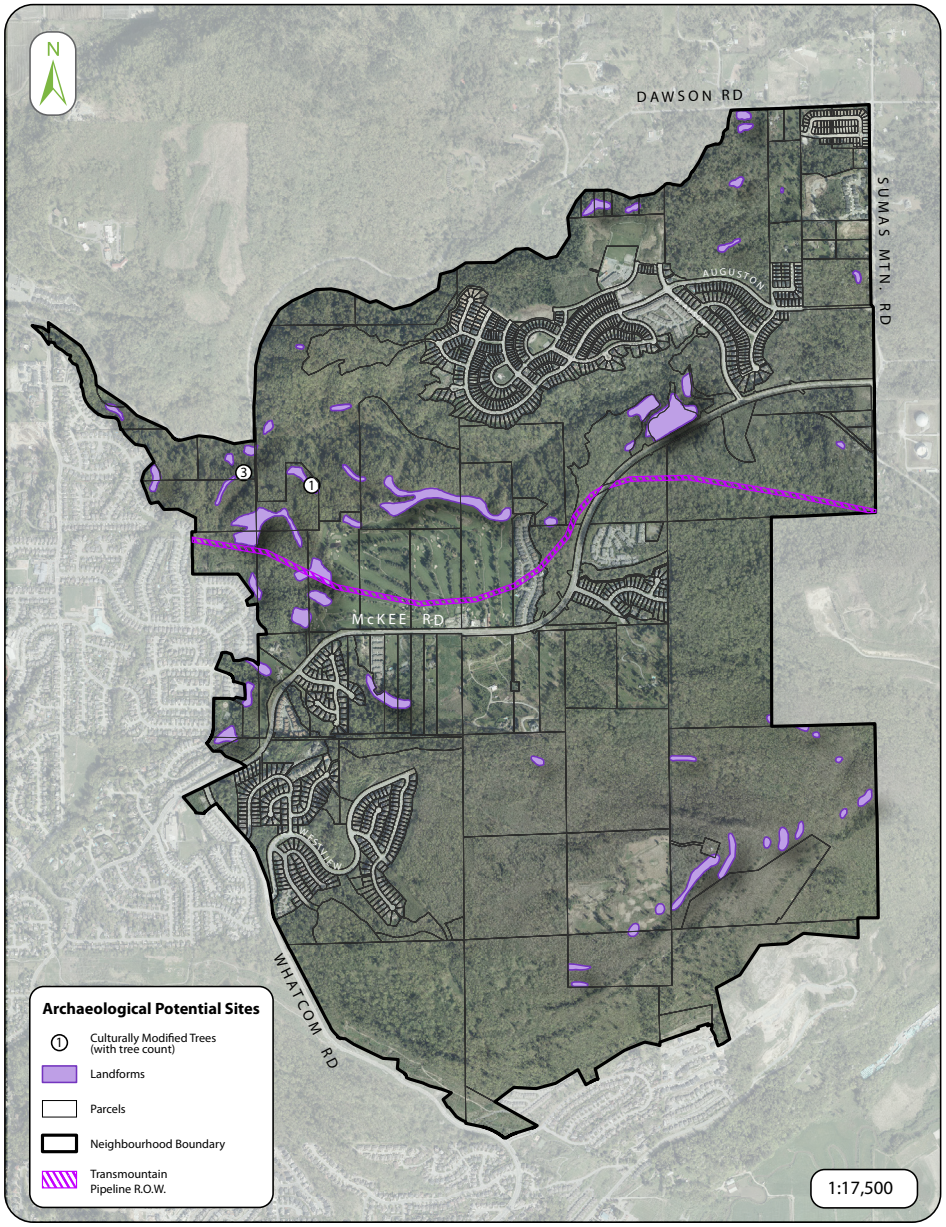
The PFR was conducted in two phases. The first phase was conducted over three days during October of 2017, while the second phase was conducted over five days in May of 2020. During the surveys, crew members were spaced 15-25 m apart and walked parallel transects when the terrain would allow. If the terrain was too steep or otherwise dangerous to traverse, surveyors were spaced 5-15 m apart and focused on areas of higher archaeological potential. The survey covered the entire plan area, and all high potential landforms indicated on LiDAR imagery were investigated. There are gaps between survey transects where potential could not be evaluated due to steep slope constraints.

3.3 AOA Results

Fifty-two areas of archaeological potential, and four Culturally Modified Trees (CMT's) were identified during the PFR (see Map 15). Forty-five of the fifty-two identified landforms were stable terraces overlooking steeply incised ravines or adjacent to small creeks. In addition, two ridgelines with high potential for trails and associated ephemeral archaeological material were recorded. Two small, flat promontories with good visibility were recorded along with one old growth cedar area and one potential cultural mound feature.

Of the fifty-two areas of archaeological potential that were identified, twenty -seven of these landforms are located within non-developable areas and will more than likely not require any further analysis. The other twenty-five areas of archaeological potential are located in either unconstrained areas (five landforms), or geotechnical risk areas and potentially unstable areas (twenty landforms), and will most likely require further analysis.

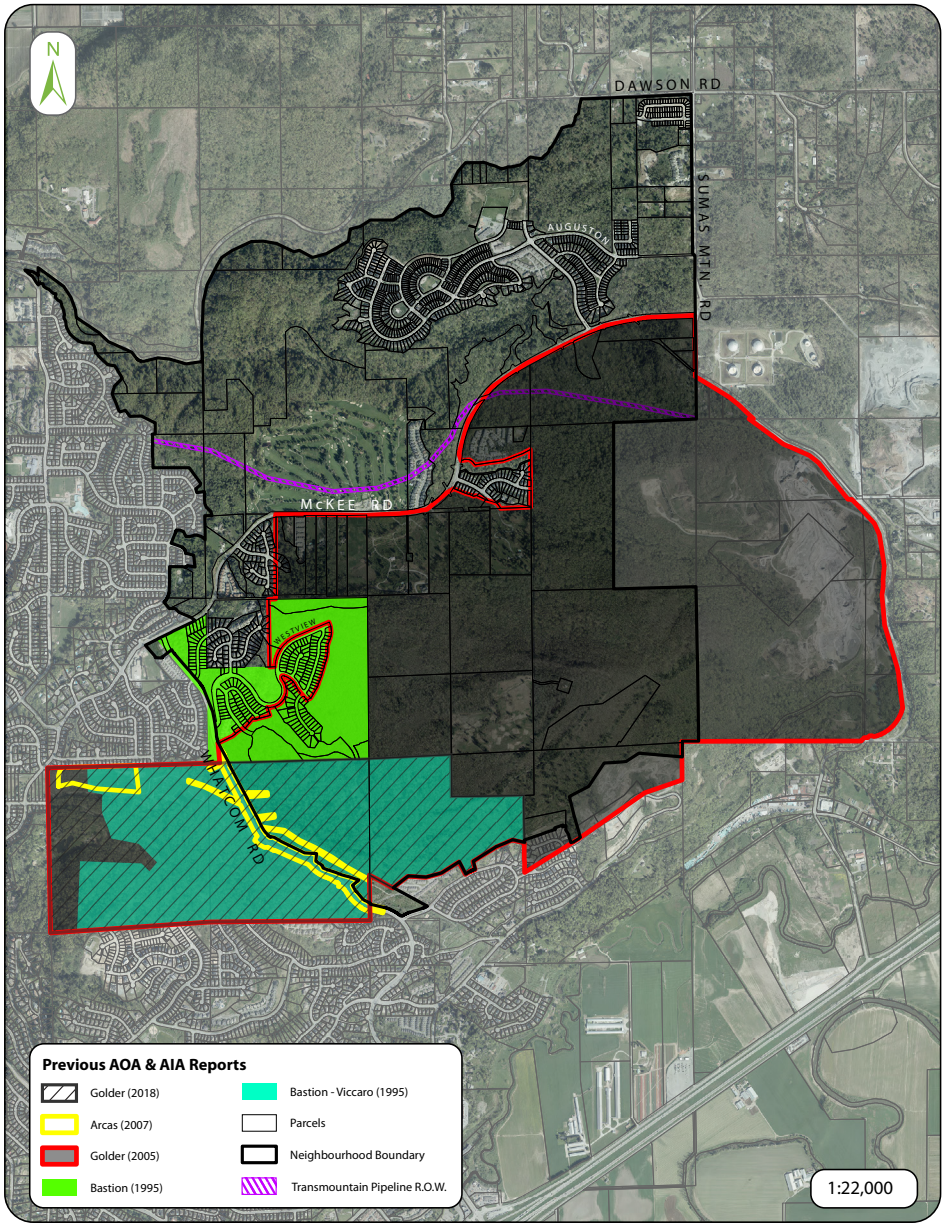
The only definitive archaeological sites identified were CMT sites. The first site comprises three bark stripped western red cedars less than 150 meters from Clayburn Creek on a steep but accessible northern slope face. Each tree has one taper bark strip on its upslope side, free of knots and other discontinuities. The age of the trees and associated features are unknown. It is likely that all three featured and trees post-date 1846. The fourth CMT was identified within 250 meters of the other group of three CMT's along a similar ridgeline landform above Clayburn Creek. As all four CMT's very likely post-date 1846, and they are not automatically protected by the Heritage Conservation Act.They exhibit clear signs of cultural modification and may hold significance to local First Nations regardless of their age. However, all four CMT's are located within SPEA setbacks and will be protected by the Streamside Protection and Enhancement Bylaw.



Map 15. Archaeological Overview Assessment

3.4 Previous Archaeological Assessments

A number of previous archaeological studies have been conducted within or adjacent to the McKee NP boundary. However, of these previously conducted studies none of them either covered the entire plan area or conducted a PFR that involved Local First Nations. The previous archaeological studies are shown on Map 16.



Map 16. Previous AIA and AOA Reports

3.5 Recommendations for Stage 2

For neighbourhood planning purposes, it is recommended that an Archaeological Impact Assessment (AIA) be conducted under a Section 14 Heritage Inspection Permit (granted from the Provincial Archaeology Branch). An AIA involves a physical assessment of an area of archaeological potential using methods such as shovel testing. This type of assessment allows an archaeology team to verify whether or not there is in fact any archaeological remains in the area.

During Stage 2, the AIA will only be conducted where sites of archaeological potential overlap with the proposed collector street network and sites needed for key infrastructure (e.g. water towers and drainage ponds). Remaining identified sites of archaeological potential will be assessed at the time of development application.

The four CMT's identified during the AOA are located within City owned lands, and as per the Sto:lo Heritage Policy manual the City will endeavor to avoid any impacts to these important sites.







4.0 Net Area

Parts two and three of this background research report have focused on providing an understanding of the environmental conditions within the McKee NP, as well as detailing the archaeological and cultural heritage aspects within the plan area. As part of this analysis, GIS mapping layers were purposefully created for each assessment to illustrate what lands were deemed developable, and what lands should be protected according to the pertinent legislation. In this part of the report, all of this information has been overlayed through GIS modeling to illustrate an overall net area.

4.1 Determining Net Area

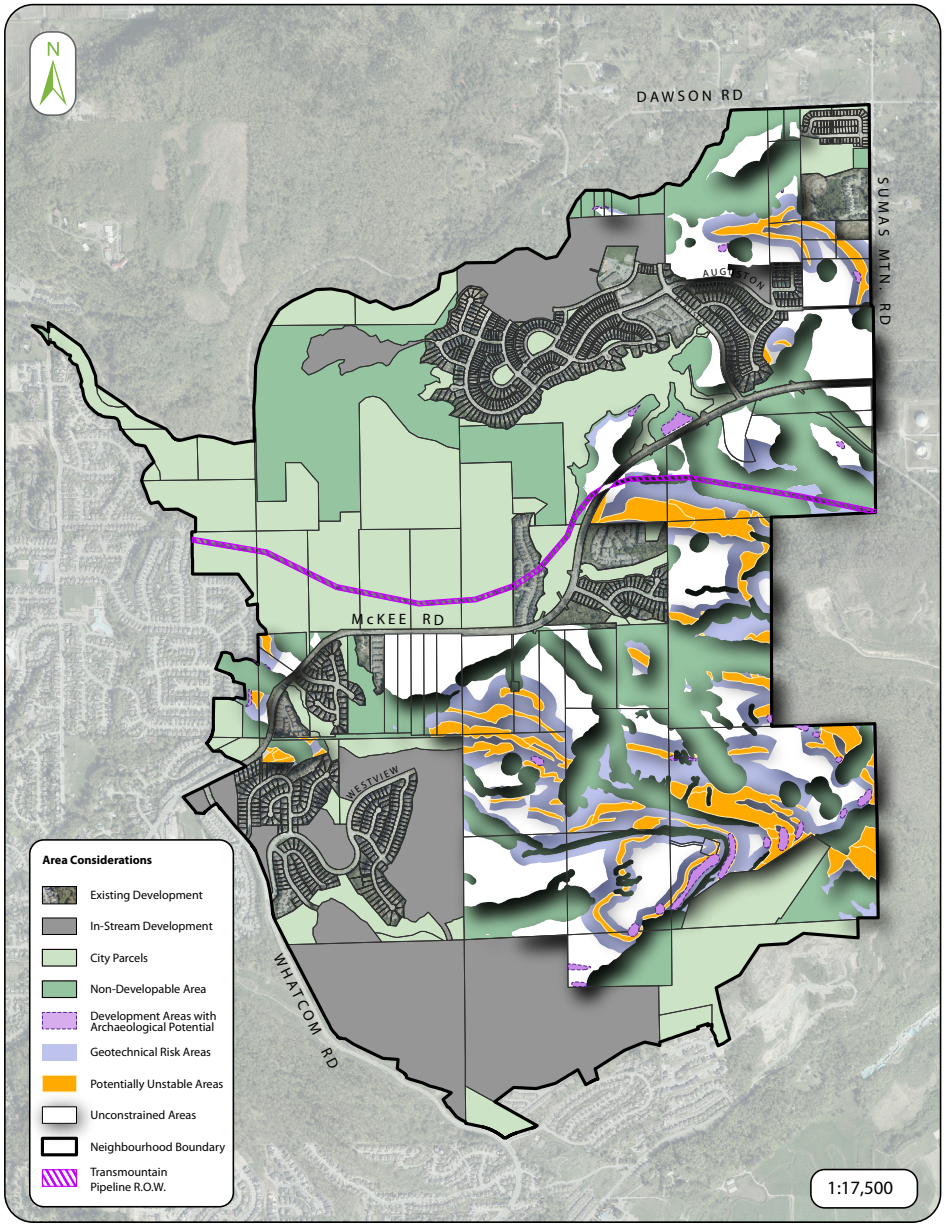
In order to determine the net area or the lands which are suitable for development within the McKee NP, a detailed inventory of gross area (GA) was undertaken using section 2 & 3 findings based on senior government legislation and Council policy. The GA accounts for the total land area of all titled parcels and rights-of-way within the plan boundary. The results of this analysis can be found in Figure 5.

Within the plan boundary, 16% of land is currently used for **existing development**: roads, pipelines, and homes either built, under construction, or approved by Council. A further 15% accounts for lands being determined through a separate process (**in-stream development**). These areas will not have their net area determined as part of the McKee NP process, because of previously granted land use permissions (i.e. zoning and subdivision). **City parcels** - which will not be developed into residential or commercial uses - constitute another 22% of the GA. The remaining 47% of the GA was analyzed during Stage 1 of the process and determined the non-developable area and the net area.

The **non-developable area** discussed in sections 2 & 3 of this document accounts for 24% of the GA. Non-developable area consists of geotechnically unstable areas, watercourses/riparian areas and their associated preliminary SPEA setbacks, and habitat required for species at risk.

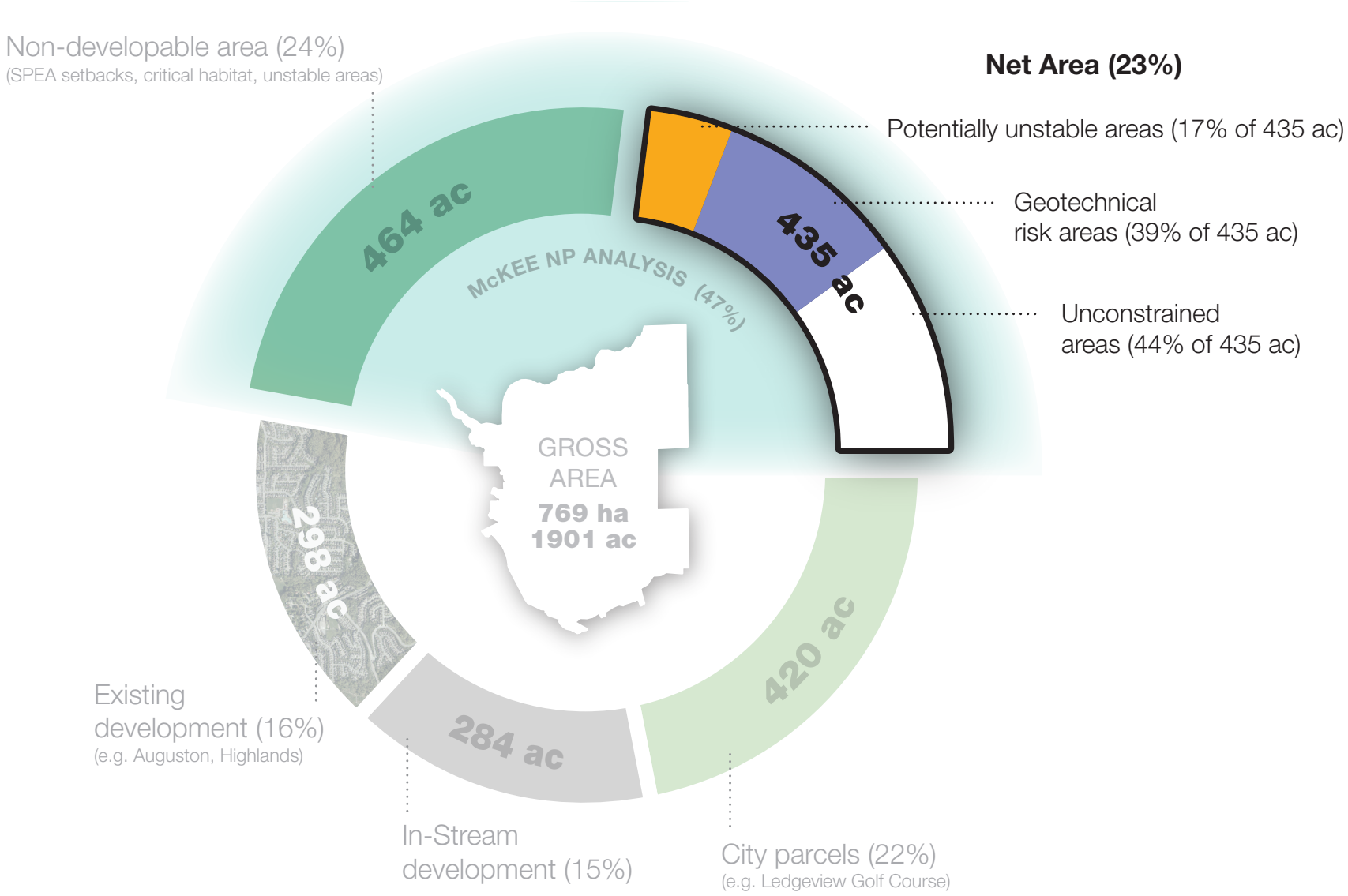
The remaining **net area,** comprised of **unconstrained areas**, **potentially unstable areas**, **geotechnical risk areas**, and **development areas with archaeological potential** will be used for future development. However, the potentially unstable areas (yellow polygons) and geotechnical risk areas (blue polygons) may only be considered developable upon further review at the time of development application. Development areas with archaeological potential could also become developable in the future, so long as further archaeological review is proven to be negative. These areas account for less than 1% of the GA, and are omitted from Figure 5.

Future development in the McKee NP will therefore include existing development, an undetermined amount of in-stream development, and the net area. During subsequent stages of the planning process, further information will become available that will refine the net area analysis.



Map 17. Net Area

Figure 5. Net Area Analysis







5.0 Existing Infrastructure

For Stage 1 the City hired an engineering consultant to review the existing stormwater, wastewater, water and transportation background documents provided by the City as they relate to the McKee Neighbourhood Plan. The tasks undertaken during this review included:

- Review background reports;
- Review GIS data;
- Identification of service levels and design criteria for the proposed water and sewer systems, and
- Identification of key considerations for Stage 2.

The purpose of this Stage 1 work is to outline all the background information available, and indicate any key considerations that will help inform Stage 2 engineering work for each utility.

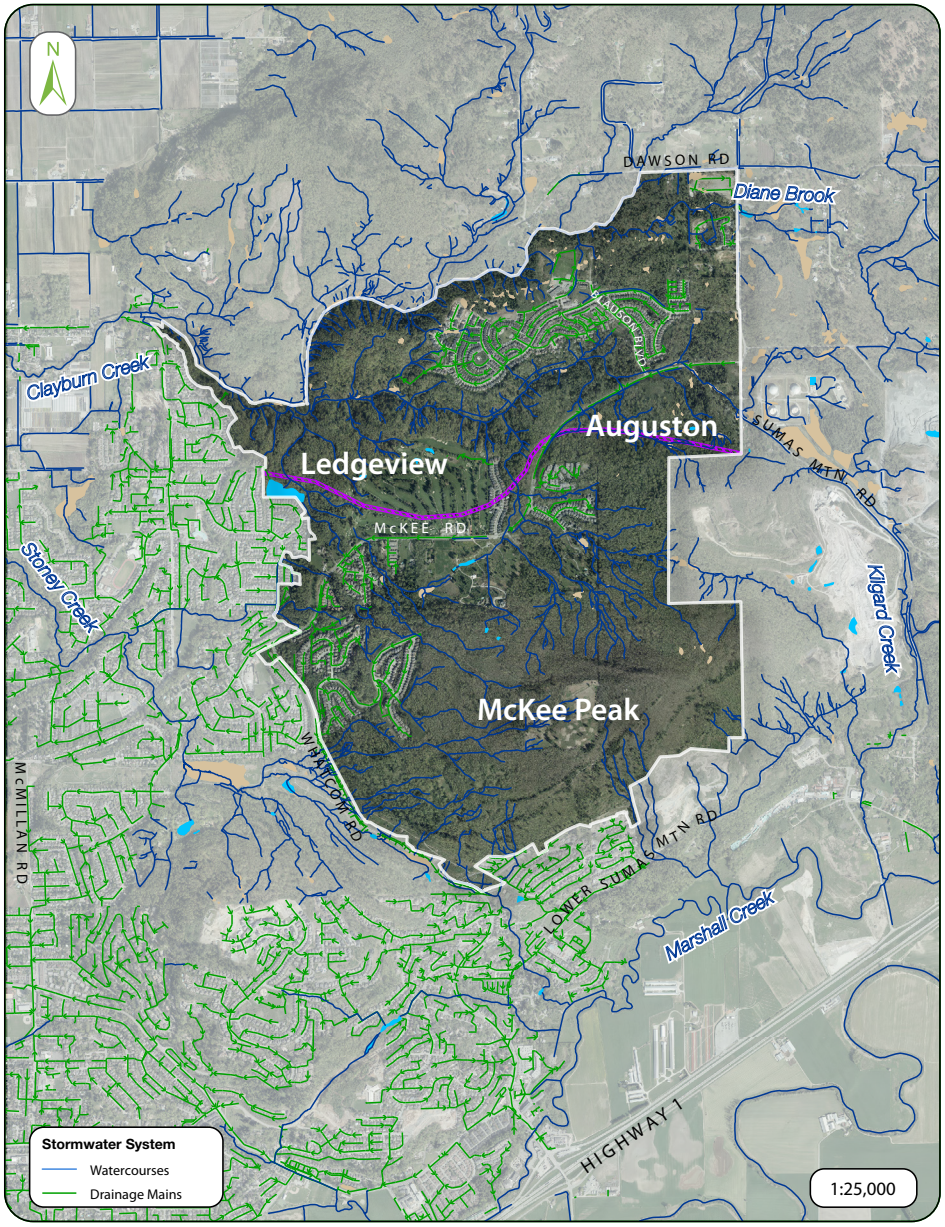
5.1 Stormwater

Within the McKee NP study area there are approximately 25 km of storm sewers located within existing development. The study area is located in two main watersheds, namely the Clayburn Creek Watershed and the Marshall Creek Watershed. The current drainage system discharges directly to, or to tributaries of Clayburn Creek or Marshall Creek.

KEY CONSIDERATIONS

Some of the key considerations include:

- The Clayburn Creek Integrated Stormwater Management Plan (ISMP) requires the 100 - year return period flows be detained to 5 L/s/ha for development upstream of Clayburn Village.
- Infiltration potential should be explored via an infiltration assessment by a qualified professional. Wherever possible and recommended, volume targets should be implemented through the use of Low Impact Developments (LID) including infiltration galleries, rain gardens, absorbent landscaping etc.
- Effects of the steep terrain will need to be considered when designing the stormwater system. For example, erosion potential of the downstream creek system should be assessed and mitigated. Storm sewer systems should also be sized to convey 1 in 100 - year events in pipes to prevent overland flow on road surfaces for safety purposes in cold and wet weather.
- The 2017 geotechnical assessment reviews the subsurface soil types within the study area, and identifies areas where bedrock is close to the surface. Design of underground utilities will need to give consideration to the existing subsurface condition.



Map 18. Stormwater System

5.2 Transportation

The McKee NP is bounded by McKee Road to the north, Whatcom Road to the West, and Lower Sumas Road to the south. Further to the east, Sumas Mountain Road provides a connection between McKee Road and Lower Sumas Mountain Road. The Trans-Canada Highway runs east-west through the region and is located approximately 3.5 km south of the intersection of McKee Road and Whatcom Road.

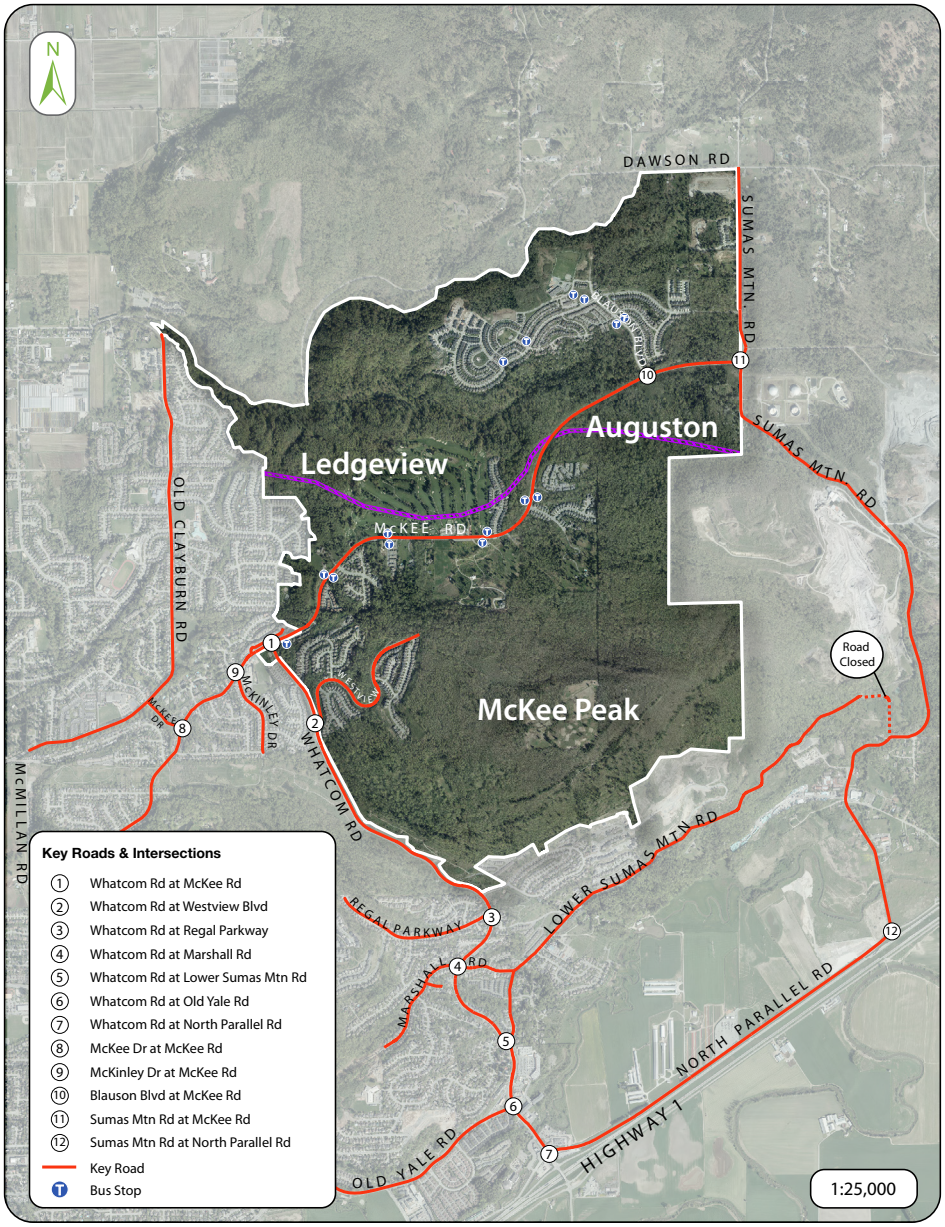
A transit route and City designated bike route is located along McKee Road. Whatcom Road has also been designated as a bike route.

The street network within the McKee NP is not fully built out and currently covers only the north-west corner of the neighbourhood. This network includes Westview Boulevard as well as a number of other smaller local roads.

KEY CONSIDERATIONS

The population growth at full build out will impact capacity of the surrounding street network. The anticipated increase in traffic volumes may require capacity and safety improvements at key intersections, which could include additional lanes or signalizing intersections. Whatcom Road provides a connection between the McKee NP and Highway 1.

Pedestrian, cyclist and transit infrastructure will need to be considered when making improvements to the road network or when developing new collector roads within the McKee NP. Enhancements should be considered that are beneficial to all street users and not just passenger vehicles.



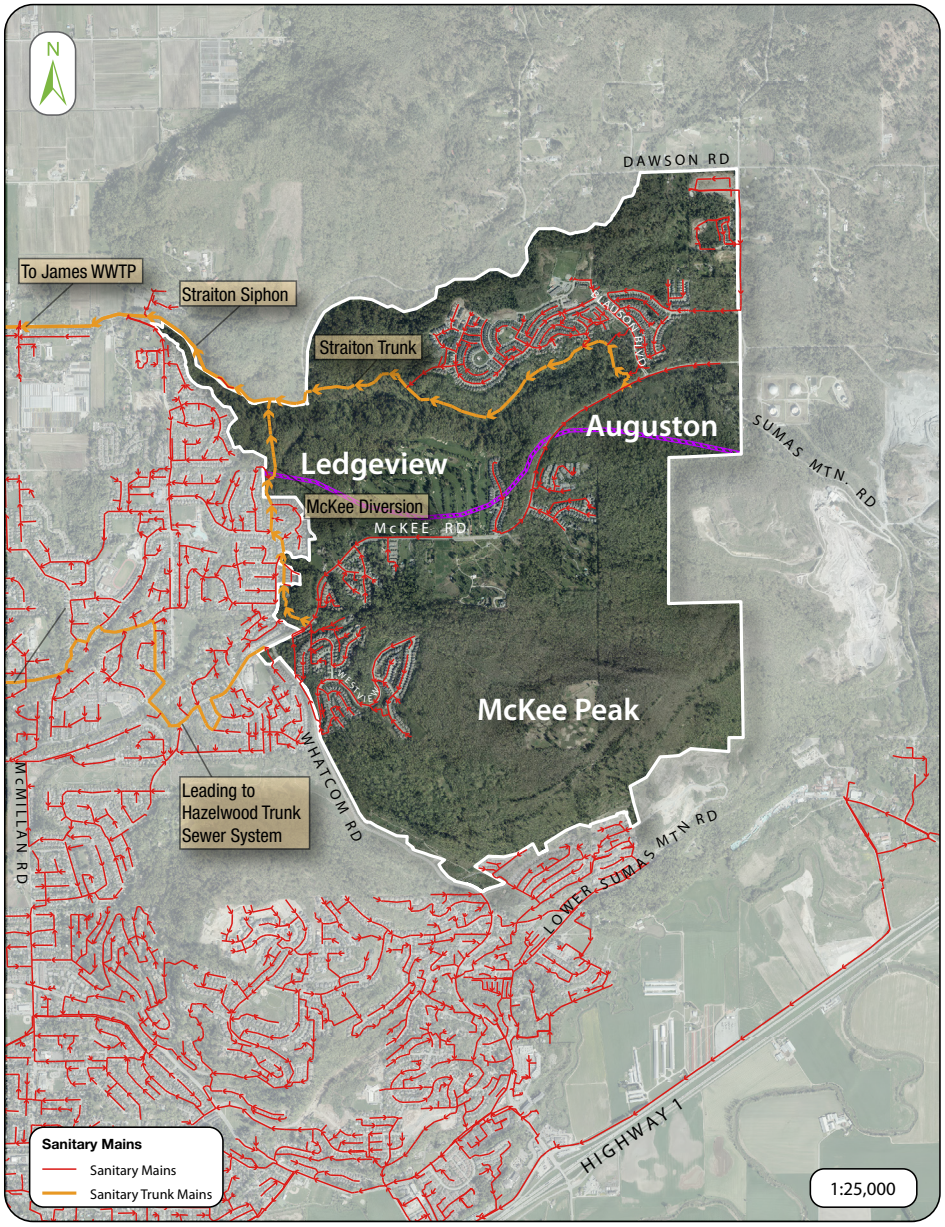
Map 19. Transportation System

5.3 Wastewater

The McKee NP area currently has approximately 25 km of sanitary sewer mains located within the Auguston, Ledgeview, and McKee Peak areas. These three sub-areas of McKee NP were primarlily serviced by two major trunk sewer systems - Straiton Trunk Sewer System (Straiton System) and Hazelwood Trunk Sewer System (Hazelwood System). Since the installation of McKee Diversion, flows that drained to Hazelwood system were diverted to Straiton system. The Straiton and Hazelwood systems connect to James Trunk Sewer, which conveys the wastewater to the Joint Abbotsford-Mission Environmental System (JAMES) Wastewater Treatment Plant. Future proposed developments in the sub-areas shall either be serviced to the Straiton system or the Hazelwood system, details of which will be evaluated at the servicing stage of the project.

KEY CONSIDERATIONS

Effects of the areas topography will need to be considered when designing the sanitary system. Designs should avoid placing sewer mains in rights of way (ROW), or under retaining walls to ensure that operational and maintenance accessibility of sewers is maintained.



Map 20. Wastewater System

5.4 Water

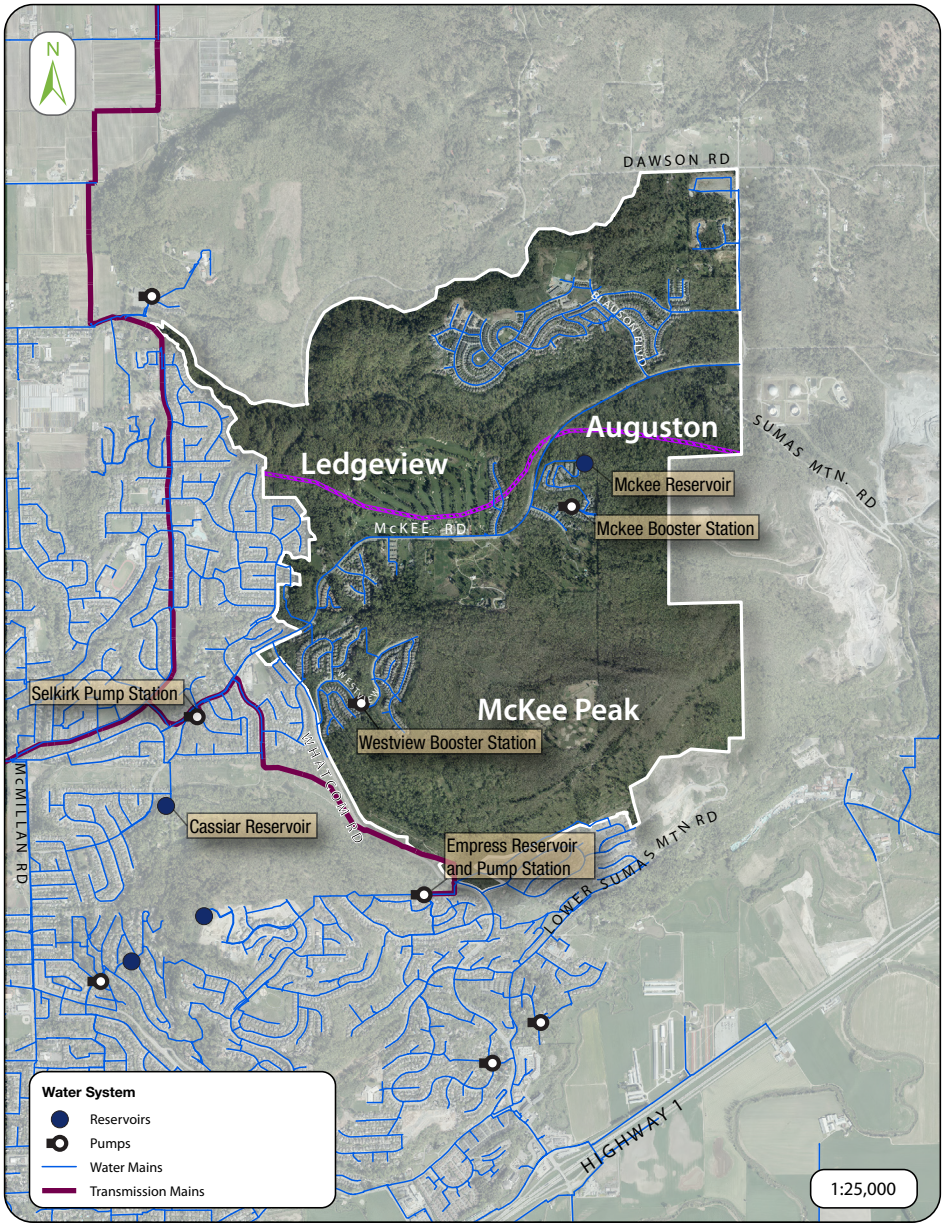
The existing water distribution system within the plan area includes over 20 km of pipes, ranging from 50 mm to 450 mm, and is mostly comprised of PVC and ductile iron pipes. The area is supplied by the 1050 mm second river crossing transmission main. A 600 mm water main branches at McKee Drive and supplies the Selkirk booster station located at McKee Road and Selkirk Avenue.

The water network is divided into three pressure zones (PZ). The Selkirk booster station services PZ 237 and pumps water to the McKee Reservoir. In this pressure zone, the McKee and Westview Booster Stations boost water to PZ 296, while a PRV (Pressure Reducing Valve) station supplies water to PZ 181.

KEY CONSIDERATIONS

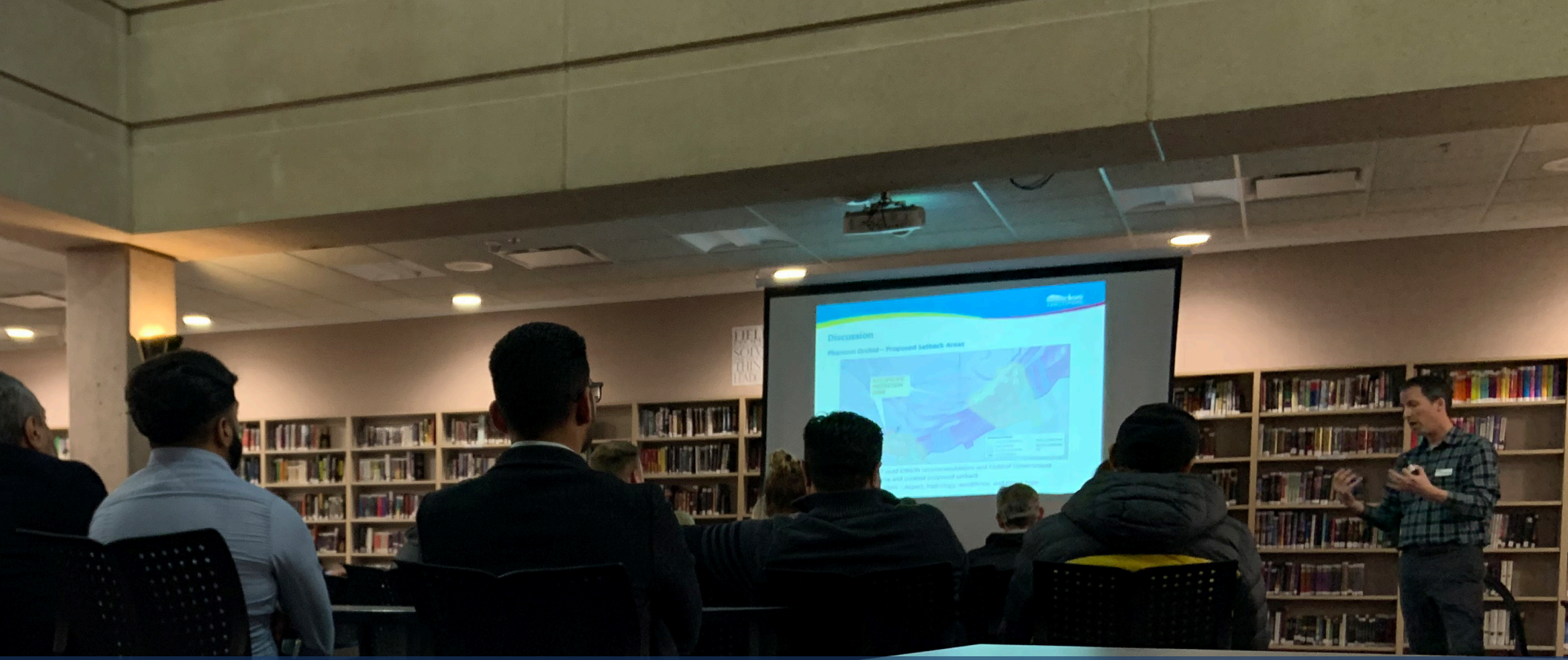
The McKee NP's topography will require several pressure zones to ensure that minimum and maximum pressure are maintained while providing required fire flows.

A location for a new reservoir will need to be identified in the area as well as additional water booster stations and pressure reducing stations to service the area. The analysis in Stage 2 and 3 will evaluate the options for this infrastructure.



Map 21. Water System





6.0 Engagement

Pursuant to Section 475 of the Local Government Act, any amendment or update to an Official Community Plan must include consideration with specific groups.

The purpose of this section is to outline the communication strategies, tasks, and activities that the City of Abbotsford will undertake to consult and engage these groups and others. It is the City's intent to enable meaningful and timely discussions that will help create the McKee Neighbourhood Plan. The engagement activities will be targeted, inclusive and innovative, and incorporate various methods to reach out to identified groups and the community. Particular attention will be paid to using different types of engagement tailored to each Stage of the process. A more detailed engagement plan will be included in each stage's staff report for the subsequent stage.

The MNP forms part of a broader city wide initiative entitled "Plan 200K' and engagement activities will take into consideration and build upon previously completed projects within the Plan 200K umbrella.

6.1 Who we will Engage

The following is a preliminary list of stakeholders who may have an interest in the development of the MNP. The list will serve as a starting point to help inform the creation and delivery of engagement activities. This will be reviewed and supplemented throughout the process.

GENERAL PUBLIC

- City of Abbotsford residents (targeting those living within the MNP)
- Individuals who use the McKee area for recreation

GOVERNMENTS AND GOVERNMENT AGENCIES

- First Nations (Leq'a:mel, Matsqui, Sumas, and Sto:lo)
- School District 34
- BC Transit
- Fraser Health
- Fraser Valley Regional District
- MOTI

CITY OF ABBOTSFORD

- City Council
- Senior Leadership Team
- Technical Advisory Group
- Development, Transportation and Infrastructure Committee (DTI)
- Community, Culture and Environment Committee (CCEC))

KEY ORGANIZATIONS

- Fraser Valley Mountain Bike Association
- Fraser Valley Conservancy
- Canadian Federation of University Women Abbotsford
- Urban Development Institute (Fraser Valley Chapter)
- Abbotsford Chamber of Commerce



6.2 How and When we will Engage

The type of engagement activities will largely depend on where the project is within the 4 stage process. Earlier, in stages 1 and 2, a broader public conversation about goals and vision is intended to help shape the more detailed and policy-driven discussions that will take place in stage 3. Stage 4 will focus on refining the draft MNP and will involve a public hearing in the adoption of the final plan.

Throughout the project the City website, Let's Talk Abbotsford and the social media accounts will be used to inform and engage the public.

STAGE 1 – BACKGROUND RESEARCH

In this stage, the engagement will focus on informing stakeholders about the McKee NP project and its process. It will also be an opportunity to introduce the environmental and archaeological and cultural heritage findings which are largely based on senior government regulation.

Activities may include:
- Update to City Committees
- Background Research Report presentation to Council
- Update through Let's Talk Abbotsford

STAGE 2 – EXPLORING OPTIONS

Engagement activities will begin during Stage 2. Activities will emphasize targeted, inclusive, innovative methods to reach out to a diverse cross section of the community. Staff will make an effort in reaching out to people where they are already gathering within the plan area such as at existing parks, trailheads or at schools.

Activities may include:
- News release
- Property owner and user group engagement
- First Nations Design engagement
- Mail-out to owners and owner-occupiers for the entire plan area
- Online survey through Let's Talk Abbotsford
- Popup event or open house (weather dependent)
- City committee workshop
- Exploring Options Report presentation to Council

STAGE 3 – DRAFT PLAN

The engagement in Stage 3 will seek to confirm the draft plan developed through Stage 2 is reflective of community desires. It will also provide an opportunity to set a direction for policies that support the draft plan.

Activities may include:
- News release
- Mail-out to owners and owner-occupiers for the entire plan area
- Popup event or open house (weather dependent)
- Draft Plan presentation to Council

STAGE 4 – FINAL PLAN

The draft McKee NP will be shared with stakeholders to gather final comments and feedback, and ensure it reflects the broader input received throughout the process.

Activities may include:
- News release
- Mail-out to owners and owner-occupiers for the entire plan area
- Final Plan presentation to Council
- Adoption as a Bylaw with Public Hearing

A more detailed engagement plan will be included in each stage's staff report for the subsequent stage.





7.0 Next Steps

The receipt of the background Research Report by the City of Abbotsford's Council marks the end of Stage 1 of the McKee NP process. With a better understanding of what land is developable and what land will be protected from a neighbourhood planning perspective, Stage 2 can now commence.

This next stage will focus on exploring options regarding preliminary servicing, land uses, parks, trails and open space with the help of the community input through broad and far-reaching engagement activities. The feedback staff receives will influence a preferred concept which will then form the foundation of the McKee Neighbourhood Plan. Staff will present a Concept Report, including detailed engagement results, to Council at the end of Stage 2.



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