COUNCIL REPORT

Regular Council

Report No. PDS 034-2024

Date: February 26, 2024
File No: 3100-05 PRJ22-107

To: Mayor and Council
From: Tahir Ahmed, Planner
Subject: Official Community Plan Amendment, Rezoning, Steep Slope and Natural Environment Development Permit with Variance applications (34010, 34024, 34040, 34056 and 34074 Maclure Road)

RECOMMENDATION

1. That Bylaw No. 3514-2024, "Official Community Plan Bylaw, 2016, Amendment Bylaw No. 025" be read a first time.

2. That, Council acknowledges that the City has referred Bylaw No. 3514-2024, "Official Community Plan Bylaw, 2016, Amendment Bylaw No. 025" to local First Nations and to School District No. 34 (Abbotsford) Board of Education and that Council deems such referral to satisfy the consultation requirements under sections 475 and 476 of the Local Government Act and that no further consultation is required.

3. That Council give second reading to Bylaw No. 3514-2024, "Official Community Plan Bylaw, 2016, Amendment Bylaw No. 025", having considered:

   (a) The City of Abbotsford's Financial Plan;
   (b) The City of Abbotsford's Wastewater System Master Plan;
   (c) The JAMES Wastewater Master Plan;
   (d) The Fraser Valley Regional District's Solid Waste Management Plan;
   (e) The matters under sections 475(2) and 476(2) of the Local Government Act and is satisfied that the consultation with School District No. 34 (Abbotsford) Board of Education undertaken to date, including the consultation undertaken to date, plus the additional consultation directed above, meets the requirements of section 476 of the Local Government Act;
   (f) The matters under section 475(2) of the Local Government Act and is satisfied that the consultation undertaken to date, plus the additional consultation directed herein, meets the requirements of section 475 of the Local Government Act.

4. That pursuant to section 477(3)(c) of the Local Government Act, Bylaw No. 3514-2024, "Official Community Plan Bylaw, 2016, Amendment Bylaw No. 025", be advanced to an upcoming Public Hearing.

5. That prior to adoption of Bylaw No. 3514-2024, "Official Community Plan Bylaw, 2016, Amendment Bylaw No. 025", the following conditions be satisfied:

(a) consolidating the properties located at 34010, 34024, 34040, 34056 and 34074 Maclure Road into one legal lot; and
(b) registering a Section 219 Covenant to limit the development to townhouses only.

6. That Bylaw No. 3513-2024, Abbotsford Zoning Bylaw, 2014, Amendment Bylaw No. 601", be given first and second readings.

7. That prior to adoption of Bylaw No. 3513-2024, Abbotsford Zoning Bylaw, 2014, Amendment Bylaw No. 601", the following conditions be satisfied:

(a) adoption of Bylaw No. 3514-2024, "Official Community Plan Bylaw, 2016, Amendment Bylaw No. 025";
(b) providing a road widening dedication along the full frontage of the properties along Maclure Road and Pratt Street, including a cul-de-sac, as highlighted in the Works and Services Report, to the satisfaction of the General Manager of Engineering and Regional Utilities;
(c) entering into a development agreement and/or providing cash-in-lieu to secure the required road dedication and utility upgrades and extensions, as detailed in the Works and Services Report and to the satisfaction of the General Manager of Engineering and Regional Utilities;
(d) providing a $43,125 Community Benefit Contribution;
(e) obtaining Ministry of Transportation and Infrastructure approval of Bylaw No. 3514-2024, "Abbotsford Zoning Bylaw, 2014, Amendment Bylaw No. 601; and
(f) resolving all issues of funding for items not budgeted by the City.

8. That Development Permit with Variance No. 2446 be approved in principle.

9. That prior to issuance of Development Permit with Variance No. 2446 the following conditions be satisfied:

(a) adoption of Bylaw No. 3514-2024, "Official Community Plan Bylaw, 2016, Amendment Bylaw No. 025" and Bylaw No. 3513-2024, "Abbotsford Zoning Bylaw 2014, Amendment Bylaw No. 601";
(b) providing a security deposit for habitat enhancement, mitigation, monitoring and permanent fence installation, prepared by a qualified professional and to the acceptance of the General Manager, Planning and Development Services, in accordance with the Development Application Procedures Bylaw, 2016;
(c) payment of an environmental inspection fee, in accordance with the Development Application and Service Fee Bylaw, 2010;
(d) submitting and obtaining approval of an Erosion and Sediment Control Plan prepared by a qualified Civil Engineer;
(e) providing a security for erosion and sediment control in accordance with the Development Application Procedures Bylaw, 2016;
(f) providing an inspection fee for erosion and sediment control in accordance with the Development Application Procedures Bylaw, 2016;
(g) submission of a Planting Plan and Construction Environmental Management Plan (CEMP) prepared by a Qualified Environmental Professional;
(h) registering a Section 219 Covenant against the title of the subject property for Protection of the Streamside Protection and Enhancement Area as generally highlighted in Figure 12 of this report;

(i) installing the temporary protective fencing along the proposed Streamside Protection and Enhancement Area;
(j) providing three sets of signed, sealed development variance permit plans and reports;
(k) providing unsecured electronic copies of all final plans and reports; and
(l) the owners providing written acknowledgment of the terms and conditions of the development variance permit in accordance with the Development Application Procedures Bylaw, 2016.

REPORT CONCURRENCE	
General Manager	**City Manager**
The General Manager concurs with the recommendation of this report.	The City Manager concurs with the recommendation of this report.

PURPOSE

To amend the Official Community Plan (OCP) land use designation from Suburban to Urban 2 – Ground Oriented with rezoning from Country Residential Zone (CR) to Multifamily Ground Oriented Zone (RMG) and to consider a Natural Environment and Steep Slope Development Permit with Variance to the Streamside Protection Bylaw (SPB) for a 1,891 m^2 reduction to the Streamside Protection and Enhancement Area (SPEA) to facilitate a 69 unit townhouse development. The proposal provides a total of 4,001 m^2 of onsite riparian area restoration and enhancement for the proposed variance.

SUMMARY OF THE ISSUE

The applicant is proposing to amend the Official Community Plan (OCP) land use designation of the subject property from Suburban to Urban 2 – Ground Oriented with rezoning from Country Residential Zone (CR) to Multifamily Ground Oriented Zone (RMG) to facilitate the construction of a 69 unit townhouse development (see Figures 1 to 13 and Attachments A-K). The proposal also includes the consideration of a Natural Environment and Steep Slope Development Permit with Variance to Streamside Protection Bylaw to reduce the SPEA to no less than the Riparian Area Protection Regulations (RAPR) requirements. The proposed variance of 1,891 m^2 will be offset by a compensation area equal to 4,001 m^2.

Staff support the proposed OCP amendment and rezoning to facilitate the construction of a 69-unit townhouse development. Staff also support the Natural Environment Steep Slope Development Permit with Variance to the SPB to reduce the SPEA given the proposed habitat compensation and restoration includes a 2:1 equivalent ratio for compensation and the proposed development generally adheres to the environmental guidelines of the OCP.

BACKGROUND

Applicant:	Atelier Pacific Architecture (Contact: Jessie Arora)
Owners:	Raicon Holdings Inc. Inc. No. BC1228471 (Directors: Ranjit Rai and Jasbir Rai)

Legal Descriptions:		Lot 1 Except: Part on Statutory Right of Way Plan 75994; Section 22 Township 16 New Westminster District Plan 8992; Lot 2 Except: Part on Statutory Right of Way Plan 75994; Section 22 Township 16 New Westminster District Plan 8992. Lot 3 Except: Part on Statutory Right of Way Plan 75994; Section 22 Township 16 new Westminster District Plan 8992; Lot 4 Except: Part on Statutory Right of Way Plan 75994; Section 22 Township 16 New Westminster District Plan 8992; and Lot 5 Except: Part on Statutory Right of Way Plan 75994; Section 22 Township 16 New Westminster District Plan 8992
Existing OCP Designation:		Suburban
Proposed OCP Designation:		Urban 2 – Ground Oriented
Existing Zoning:		Country Residential Zone (CR)
Proposed Zoning:		Multifamily Ground Oriented Zone (RMG)
Site Area:		1.79 ha (4.41 ac)
Site Description:		The subject site is situated at the intersection of Pratt Street and Maclure Road, northeast of the intersection between Highway 11 (Sumas Way) and Gladys Avenue, located to the south of Hazelwood Cemetery. Presently, its access is limited to a tunnel (Pratt Street) beneath Highway 11 (Sumas Way). The site consists of five large suburban lots containing individual single detached dwellings along with several accessory structures such as machine sheds. Certain sections of the property exhibit slopes exceeding 20%, necessitating compliance with the Steep Slope Development Permit requirements. The current structures are proposed to be demolished and lots will be consolidated into one property.
Surrounding Uses:	N:	Maclure Road and Hazelwood Cemetery designated Open Space (zoned P2) and Hazelwood Ave/Elmwood Dr beyond;
	S:	Highway No. 11 (Sumas Way) and residential lands beyond;
	E:	Properties containing single detached dwellings, designated Suburban (zoned CR) – currently under development application PRJ22-107 and townhouse development beyond; and
	W:	Pratt Street, single detached dwellings on lots zoned P2 and CR, designated General Industrial.

DISCUSSION

Context

1. The subject site is located as a relatively isolated parcel of land situated south of

Hazelwood Cemetery on Maclure Road, northeast of the intersection of Highway 11 (Sumas Way) and Gladys Avenue. Presently, access for vehicles is confined to Pratt Street, accessed through a tunnel beneath Highway 11 (Sumas Way). Public and private cemeteries (Hazelwood and Mennonite Cemetery) are located to the north of the site. The Discovery Trail traverses east-west through Hazelwood Cemetery, situated north of the subject site (refer to Figure 2). The nearest commercial area lies approximately 1 km away, southeast of the subject site, with accessibility planned via the proposed Maclure Road/Elmwood extension. According to information from the Abbotsford School District website, the current catchment schools for these properties are Margaret Stenersen Elementary, Clayburn Middle, and Robert Bateman Secondary.

Official Community Plan (OCP)

2. As per the 2016 Official Community Plan (OCP) the subject properties are designated Suburban (Figure 3). This land use designation allows for residential developments comprising single detached dwellings with a maximum height density of 2.5 units per hectare.

3. The applicant is proposing an OCP amendment to change the land use designation from Suburban to Urban 2 – Ground Oriented, which allows multifamily housing of ground-oriented multiplex, duplex, row or townhouses. The permitted densities range between 0.5 and 1.5 FSR with heights up to three storeys.

4. In 2018, subsequent to the adoption of the 2016 Official Community Plan (OCP) and during the preparation Transportation Master Plan, the subject properties underwent Council deliberations regarding a proposed modification to the land use designation to permit increased density.

5. According to Report No. 034-2018 presented to Council by staff regarding "Official Community Plan Housekeeping Amendment - Public Hearing Input," it is acknowledged that the low-density designation of these properties reflects considerations of urban layout and challenges related to local access, particularly with vehicle movements limited to Pratt Street beneath Highway 11. Regarding the redevelopment potential of these properties, the report also highlights:

> *"…..2016 OCP designation is appropriate based on the urban structure growth approach and existing access constraints of the site. However, this does not preclude changes to the area in the future. More detailed analysis of site access through Pratt Street is required to determine whether or not more density, and therefore more vehicle trips, could be accommodated. This analysis would be done through a site specific OCP amendment application rather than a broad housekeeping update".*
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> *(see Attachment D for details)*

6. Additionally, as part of the preparation for the Transportation Master Plan, outlined in Report No. ENG 052-2018 titled "Maclure / Hazelwood Area Transportation Network," staff put forward the following observations regarding the future prospects of these properties:

> *"With the transportation network changes described in this report to enable better connections and more efficient vehicle movement, a land use designation change (townhouses) to these properties may be appropriate when combined with its proximity to a Neighbourhood Centre (Immel). Staff recommends that an OCP amendment to change the land use designation should be considered in conjunction with a rezoning application reflecting the detailed development proposal for the subject area".*
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> *(for details, see Attachment E)*

7. After careful consideration of the proposal within the framework of the policies, studies and reports considered by Council, and with the aim of facilitating improved vehicular and pedestrian connections through the neighbourhood, staff support the proposed amendment of the Official Community Plan from Suburban to Urban 2 – Ground Oriented for the following rationale:

    a. The proposal is in accordance with the recommendations put forth by staff in both the Official Community Plan Housekeeping Amendment - Public Hearing Input (Report No. PDS 034-2018) and the Maclure/Hazelwood Area Transportation Network (Report No. ENG 052-2018), which were endorsed by Council. The project entails the construction of a Maclure Road extension, linking the current properties to Elmwood Drive, thereby establishing a connection to the nearby Neighbourhood Center (Immel Street).

    b. The close proximity of the subject properties to Neighbourhood Center (Immel Street), Highway 11 and Discovery Trail, renders them highly suitable for multifamily density, ideally accommodating townhouses. Given that all off-site improvements are funded by the developer, the staff firmly believe that the proposed density, aimed at facilitating townhouse development, is the most fitting option for these properties.

    c. The proposed development is also in keeping with the broad objectives and policies of the Urban Structure of the OCP by:

        i. Focused Residential Growth – Focus an overall 75% of new residential growth (approximately 45,000 new residents) in centres and existing neighbourhoods, with the most intensification in the Urban Core;
        ii. Housing Diversity – Support diverse housing types for a variety of household sizes, incomes, tenures, and preferences; and
        iii. Residential Intensification – Focus residential intensification around the Urban and Neighbourhood Centers.
        iv. Infrastructure; growth pays for itself – Infrastructure planning and development are intricately linked to the land use plan, ensuring that investments are made efficiently and that the expenses associated with servicing new developments are entirely covered by those who directly reap the benefits. The proposed development will be mandated to fully cover the expenses for off-site infrastructure capacity enhancements, which confer benefits to the wider community. These costs are separate from the obligatory Development Cost Charges (DCC).

OCP Amendment Consultation (Public Information Meeting)

8. Section 475 of the Local Government Act (LGA) states that when an amendment to an Official Community Plan (OCP) is proposed, the local government must provide an opportunity it considers appropriate for consultation with persons, organizations and authorities it considers will be affected. This is in addition to a Public Hearing.

9. To align with this LGA requirement, Section 3.1 (Notification and Consultation) of the Development Application Procedures Bylaw outlines that OCP amendment applications be presented for public review at a City hosted information meeting, prior to proceeding for Council consideration. In this regard, both an in-person Public Information Meeting (PIM) and an online consultation opportunity, using the City of Abbotsford's 'Lets Talk Abbotsford' community engagement platform, were available for staff to receive public input on the proposal. The outcomes of these events are summarized below, and attached to the Council Report for Council's consideration.

10. For the online consultation, residents were invited to review the proposed OCP amendment and associated project details online from November 8, 2023 to November 29, 2023 (3 weeks) and complete a survey to identify key community concerns related to the OCP amendment. In accordance with the Development Application Procedures Bylaw, newspaper advertisements were published, and notification was mailed to residents within 250 m of the subject property.

11. During the three-week online consultation period, a cumulative of 6 online surveys were submitted. All respondents were identified as property owners and/or residents of Abbotsford. Among the total respondents, three individuals (50%) expressed opposition to the proposed OCP Amendment, while the rest of three respondents (50%) indicated their support.

12. The online feedback encompassed commentary on the newly proposed connection linking Maclure Road and Elmwood Drive, as well as considerations regarding tree preservation. Supporters of the proposed OCP amendment viewed the development favorably, citing it as a beneficial investment for the area and a valuable addition to the city's housing stock. However, several respondents expressed concerns about neighborhood traffic, particularly at the intersection of Old Clayburn Road and Immel Street. Additional remarks on the proposal are detailed in the attached Online PIM Survey Response Report (08 November 2023 - 29 November 2023) - Attachment F.

13. The in-person Public Information Meeting (PIM) took place on November 15, 2023, at Dr. Thomas A. Swift Elementary School, situated at 34800 Mierau Street. This PIM coincided with another PIM concerning an OCP Amendment (PRJ22-037) for neighboring properties located at 34098, 34118, 34144,34164 Maclure Road. However, each project was presented to the public independently, allowing for separate feedback sessions on each individual project.

14. At the PIM, a total of seven individuals were in attendance, and two comment sheets were submitted by Abbotsford property owners and/or residents. One comment sheet expressed support for the proposed OCP amendment, as well as for the associated rezoning amendment and the plan to develop the properties into townhouses. Conversely, the other comment sheet indicated uncertainty regarding the proposed OCP amendment, with no expressed support for the associated rezoning amendment or the development proposal. Detailed remarks are enclosed as Attachment G.

OCP Amendment Consultation (General)

15. Section 477(3) of the Local Government Act further requires that after the first reading of an OCP amendment bylaw, "the local government must do the following in the indicated order:

    a. First, consider the proposed Official Community Plan in conjunction with

        i. Its financial plan, and
        ii. Any waste management plan, under Part 3 (Municipal Waste Management) of the Environmental Management Act that is applicable in the municipality or regional district;

    b. Next, if the Official Community Plan applies to land in an Agricultural Land Reserve, refer the plan to the Provincial Agricultural Land Commission for comment; and
    c. Finally, hold a public hearing on the proposed official community plan in accordance with Division 3 (Public Hearings on Planning and Land Use Bylaws).

16. Accordingly, should Council grant first and second readings to the proposed OCP amendment bylaw, a recommendation is included in this report to consider the amendment in conjunction with the City of Abbotsford's Financial Plan, Wastewater System Master Plan, JAMES Wastewater Master Plan, and the Fraser Valley Regional District's Solid Waste Management Plan.

    This proposal does not amend the City's policies and targets related to solid waste and wastewater, and the development continues to meet the overall intent and direction of the City's masterplans.

    As the lands are located outside the Agricultural Land Reserve, referral to the ALC is not required.

17. Section 475 of the Local Government Act further stipulates that Council should: "consider whether consultation is required with the following:

    - *The board of the regional district in which the area covered by the plan is located;*
    - *The board of the regional district that is adjacent to the area covered by the plan;*
    - *The council of any municipality that is adjacent to the area covered by the plan;*
    - *First Nations;*
    - *Boards of education, greater boards and improvement district boards; and*
    - *The provincial and federal governments and their agencies."*

18. The subject property is not abutting local governments or First Nations and remains consistent with the FVRD Regional Growth Strategy. Furthermore, a referral of the application was sent to the Abbotsford School District and First Nations when this application was received, and staff did not receive any response. Accordingly, it is recommended that further consultation not be undertaken.

Affordable Housing Strategy

19. On May 25, 2020 the City adopted an updated Affordable Housing Strategy (AHS). This strategy contains two overarching policy topics; Housing Supply and Partnerships and

Coordination. Under the category of Housing Supply, similar to the OCP objectives and policies, the AHS encourages the development of diverse housing options for all stages of life across the housing continuum. The applicant's proposal is consistent with this policy objective.

Zoning

20. The subject properties are currently zoned Country Residential (CR) as shown in Figure 4. If the proposed OCP amendment is approved, the applicant proposes to rezone the site to Multifamily Ground Oriented Zone (RMG) to facilitate the construction of a 69 unit townhouse development with an FSR of 0.80.

21. RMG Zone intends to accommodate townhouse developments up to three storeys in height for lands designated Urban 2 – Ground Oriented in the City's OCP. The RMG Zone fully aligns with the Urban 2 – Ground Oriented land use designation in the OCP, and staff, therefore, support the proposed rezoning.

Natural Environmental Development Permit (NEDP)

22. As the proposed development is located within a Natural Environment Development Permit (NEDP) area, and as such, is subject to the issuance of an NEDP. The objectives of the NEDP are to allow land to be used for its intended purposes, while also protecting, enhancing and/or restoring the City's natural environmental areas including habitat for species at risk, prevent the introduction and spread of invasive species, and protect water quality and quantity. The terms and conditions of the subject NEDP have been incorporated into DP No. 2446.

23. According to the Environmental Report (Attachment I), the subject site contains Willband Creek (Tributary A) and a wetland both located within the south portion of the property. Both of these water bodies are categorized as non-fish bearing and permanent. The applicant is seeking variances to the applicable setbacks, as detailed in the subsequent sections.

24. The project design has considered the NEDP objective of utilizing the mitigation hierarchy of avoid, mitigate, and compensate to improve the integrity, ecological health and biodiversity of Abbotsford's natural features and ecosystems, as outlined below:

    a) Avoid: Permanent wetland habitat areas and watercourses and riparian areas with high habitat value have been avoided.

    b) Mitigate: efforts to reduce the adverse impacts include the following measures:

    - Utilizing fencing to limit project footprints;
    - Considering windfirm boundary assessments during the tree preservation strategy to ensure the integrity of the SPEAs;
    - Refining the lot boundaries based on protection of critical root protection zones to ensure the integrity of the SPEAs;
    - Conducting mass grading work in appropriate least risk windows and conducting species surveys and salvages where appropriate;
    - Restoring areas of temporary impacts through application of growing medium and native planting;

- Stormwater management: The civil design includes the consideration of stormwater baseflow into the watercourses and outfalls are incorporated into infilled channels;
- Fencing of the full perimeter of the SPEA and adjacent natural areas, along with signage to identify the environmental sensitivities of the lands; and
- Placement of a Restrictive Covenant over the offsetting areas for long term stewardship.

c) Compensate: residual impacts are proposed to be off-set through the development of a compensation program that includes restoration of historically disturbed areas within the SPEAs on-site to improve fish habitat in the McLennan Creek watershed.

25. As described in more detail below, it is staff's opinion that the applicant has demonstrated an appropriate implementation of the Mitigation Hierarchy, which is reflected in the details of the proposed development and environmental works.

Variance to Streamside Protection Bylaw (SPB)

26. The subject property is further subject to Streamside Protection Bylaw (SPB) for which the applicant is proposing a variance. As per the SPB, Ditch 1 requires a 2.0 m of Streamside Protection and Enhancement Area (SPEA) and 2.0 m of Riparian Areas Protection Regulation (RAPR) whereas Ditch 2 does not require any setbacks as it is a localized man-made drainage channel and classified as Non-Fish Habitat.

27. Tributary A, on the other hand, necessitates 30 meters of Streamside Protection and Enhancement Area (SPEA) along with 10 meters of Riparian Areas Protection Regulation (RAPR). Within the SPEA requirement, this translates to a total area of 4,146 m^2. The applicant is seeking variances to the Streamside Protection Bylaw (SPB), requesting a reduction of 1,891 m^2 to the SPEA to accommodate the construction of the proposed townhouse development. To compensate for this reduction, the proposal includes the provision of an enhancement area totaling 4,001 m^2, surpassing the 2:1 ratio (refer to Figure 12).

28. The applicant's Qualified Environmental Professional (QEP) also advises that the proposed 1,891 m^2 reduction in the SPEA remains consistent with the provincial RAPR requirements.

29. Staff support the proposed variance to the Streamside Protection Bylaw as the proposed rehabilitation/restoration meets the policies within the OCP and meets the provincial RAPR stream setbacks.

Habitat Compensation and Restoration Planting

30. A variance to the Streamside Protection Bylaw is typically accompanied by a habitat compensation/mitigation planting plan to offset the impacts resulting from the variance request and an associated monitoring program to ensure the works are successfully executed and maintained.

31. The City's current Streamside Protection Bylaw does not currently contain language regarding specific compensation ratios. However, the guidelines contained within the

City's OCP NEDP indicate where the loss of riparian habitat is unavoidable; replace the value of lost habitat at a ratio of 2:1, which in this case equates to 3,782 m^2. As part of the proposed works, a total of approximately 4,001 m^2 of riparian habitat will be planted with native shrubs and trees which is slightly more than the required compensation area of 3,782 m^2 (at the rate of 2:1).

32. Prior to the issuance of Development Variance Permit No. 2446, the applicant will need to provide detailed final plans showing the proposed works within the habitat compensation and restoration area, existing trees, planting plan, cross sections and profile views. The applicant will need to submit a Construction Environmental Management Plan (CEMP) prior to the issuance of the Development Variance Permit, which will outline the proposed work in detail and how it will be carried out. All of these requirements have been included in the recommendations of this report.

33. The Environmental Coordinator reviewed the Environmental Impact Assessment report (Fish Habitat Assessment & Wildlife Habitat Report) for the proposed changes to Streamside Protection and Enhancement Areas, prepared by BlueLines Environmental Ltd. dated July 19, 2023 and concurs with the evaluation of the consultant and is of the opinion that the proposal meets the intent of the policies contained within the OCP.

Senior Agency Regulatory Considerations

34. The Environmental Assessment Report also notes the proposed development will include requirements for the installation of a single stormwater outfall, installation of which will require compliance with the Water Sustainability Act, Water Sustainability Regulation. A notification pursuant to Section 39 of the Regulation will be required with works completed under environmental monitoring supervision to ensure adherence with instream works standards and best practices.

Steep Slope Development Permit

35. As per the OCP, the portions of the subject properties are located within the Steep Slope Development Permit area, as shown in Figure 5. The Steep Slope Development Permit area guidelines are intended to allow land to be used for its intended purpose, while also protecting residents and property from the potential risk of natural hazards. In some cases, development on or near steep slopes is unavoidable and requires measures during site and building design, construction, and long-term maintenance to minimize the associated risks.

36. As Council is considering a variance to the Streamside Protection Bylaw, a Steep Slope Development Permit is also included in this consideration as the overall ground works are contingent on each other. The applicant has provided a Geotechnical Assessment Report (dated June 6, 2022), prepared by GeoWest Engineering (Attachment H). As the applicant still needs to update the site plan based on the finalized road dedication; as per the Works and Services Requirements, the Geotechnical Report suggests that a sealed Landslide Assessment Assurance Statement "Appendix D" can be provided upon request and after completion of a review and approval of the finalized development and grading designs. Staff recommend that before the issuance of the Development Permit with Variance No. 2446, the applicant shall provide an updated Geotechnical Report based on the updated site plan, including Landslide Assessment Assurance Statement "Appendix D" to the satisfaction of General Manager Planning. The DP shall also include

this report as a schedule and all of the development on the subject properties needs to adhere to the recommendations of the Geotechnical engineering.

37. Staff support the proposed Steep Slope Development Permit in conjunction with Variance to the Streamside Protection Bylaw given that the design generally adheres to SSDP guidelines and the proposed habitat compensation and restoration includes a 2:1 equivalent ratio for compensation and the proposed development generally adheres to the environmental guidelines of the OCP.

Multi Family Form and Character Development Permit (F&C DP)

38. The proposed development is subject to the Multifamily Residential Development Permit guidelines contained within the OCP. The objectives of these guidelines are to encourage the construction of well-designed, attractive and livable residential developments.

39. The applicant has submitted architectural and landscape plans, prepared by Atelier Pacific Architecture and M2 Landscape Architects dated April 13, 2022 and June 8, 2022 respectively. The proposal consists of 69 four-bedroom townhouses located within 15 three-storey buildings. The unit sizes range from 125 m^2 (1,346 f^2) to 172 m^2 (1,857 f^2) See attached Figures 7 – 10 for details. The proposal generally meets the F&C DP guidelines contained in the OCP.

40. As the proposal fully complies with the Zoning Bylaw (ZB) and no variances to ZB are proposed, following Council consideration of the OCP amendment, rezoning and Variance to SPB applications, the Multifamily Residential Development Permit for Form and Character will be reviewed for issuance by the Director, Development Planning in accordance with the delegation of powers contained within the Development Application Procedures Bylaw.

Access and Parking

41. Currently, the subject site's only vehicular access is via Maclure Road, using Pratt Street through a tunnel under Highway 11. As part of the off-site improvements, the developer is required to build a new road connection between Maclure Road and Elmwood Drive, as outlined in the Works and Services Report (See Figure 13 and Attachment J). This new connection will connect the subject site to the nearby Neighbourhood Center on Immel Street.

42. Discovery Trail traverses through the Hazelwood Cemetery, situated north of the site. In accordance with Parks, Recreation & Culture requirements, the developer is required to relocate the Discovery Trail to the cemetery's edge to ensure its alignment with the Maclure Road extension (see Figure 13). This adjustment of the Discovery Trail will result in a better alignment to ensure an enhanced user experience.

43. The above-mentioned off-site works, along with the rest of the off-site improvements required for the proposed development shall be secured through a Development Agreement under the Works and Services Requirements.

44. The site will be provided with a 6.0 m wide accessway to the municipal road with internal strata lanes providing access to individual townhouse units. The units located along the municipal roads will directly be connected to City's sidewalk.

45. As required by the Zoning Bylaw, the development provides a total of 152 off-street parking spaces. Each unit includes the required two resident parking spaces within a garage, in a side-by-side configuration and a total of 14 visitor's parking spaces (0.2 visitor spaces required per dwelling unit) are provided throughout the development.

Tree Removal and Replacement / Landscaping

46. An Arborist report is submitted in conjunction with this application, which is prepared by Kilmo and Associates, dated July 29, 2021 (see Attachment K). A total of 84 mature trees were assessed of which 55 are located on-site, 16 are located within Road ROWs and 13 trees are located at/shared with neighbouring properties and all of these 13 off-site/shared trees are proposed to be retained.

47. The report also highlights the need to remove 16 trees situated along the frontage of Maclure Road. These trees are expected to be cleared as part of the future road widening project mandated by the Works and Services Requirements. Since their removal is tied to road and infrastructure enhancements, there is no obligation for replacement trees.

48. Consistent with the Tree Protection Bylaw, the removal of 71 trees will require the provision of replacement trees on-site or a cash contribution in lieu of replacement. Replacement trees are calculated at a 3:1 ratio for trees having a diameter greater than 30 cm DBH and at a 2:1 ratio for trees having a diameter of 20 – 30 cm DBH. Accordingly, staff anticipate 213 replacement trees being required in conjunction with the Development Permit. However, the landscape plan illustrates 125 trees to be planted on-site, the developer is anticipated to provide cash-in-lieu payment for the remaining 88 replacement trees ($26,400). Tree removal/replacement and landscaping requirements will be secured at the time of the subsequent Multifamily Residential Development Permit.

49. As the tree removal is being authorized through the issuance of the Development Permit, protective fencing must be installed around any off-site trees identified for retention consistent with the Arborist Report in advance of DP issuance. Staff also note that the plantation under the SPEA is totally separate from this tree calculation above and shall be secured through separate security under DP with Variance No. 2446. In conjunction with this development, street trees are required in accordance with the Development Bylaw and will be secured through the required works and services.

Community Benefit Contributions

50. On September 11, 2023, Council adopted Policy C007-11 which establishes and describes a Community Amenity Contributions (CAC) program for residential development applications that require rezoning. Under this policy, CAC's are defined as voluntary amenity contributions made by the developer as part of their rezoning proposal and are intended to offset the cost of providing community amenities associated with new residential development. With respect to residential developments, the voluntary cash-in-lieu contribution is $5,000 with the funds being directed to the Affordable

Housing Opportunities Reserve Fund (Affordable Housing), and a Community Amenities Reserve Fund (Recreation Amenities and Green Space, Cultural Amenities and Emergency Service Amenities). The policy applies to all new rezoning applications made after September 11, 2023. As the subject application was made prior to September 11, 2023, the applicant has proposed a community contribution under the previous Community Benefit Contribution (CBC) policy. The recommended CBC for this application is $43,125 ($625 per new unit).

Lot Consolidation

51. In order to facilitate the proposed development, staff recommend that all four properties be consolidated into one lot as a condition of the rezoning. Once the lots are consolidated the new legal property will receive a new civic address.

House Demolition

52. Given that there is a concurrent DP to redevelop the lands as a townhouse development, the demolition of the existing houses will be addressed with future approvals.

Ministry of Transportation and Infrastructure (MoTI) Approval

53. The subject property is located within 800 m of a controlled access intersection therefore, the proposed Bylaw No. 3513-2024, “Abbotsford Zoning Bylaw, 2014, Amendment Bylaw No. 601" requires approval from the Ministry of Transportation and Infrastructure (MoTI). MoTI has reviewed the proposal and indicated their support for the proposal. Should the rezoning bylaw receive three readings, MoTI will be required to sign the bylaw before final adoption.

Site Development Considerations

54. A staff review of the Works and Services Requirements necessary to support this application has been completed and is outlined within Attachment J, the details of which will be incorporated into the Development Agreement, a prerequisite for the adoption of the rezoning bylaw. Some notable off-site requirements of the attached Works and Services Requirements are:

    a. Construction of a new intersection and connection of Maclure Road and Elmwood Drive to provide access to the proposed development. This road network was previously endorsed by Council through “Maclure / Hazelwood Area Transportation Network” in 2018. Please see the enclosed Report No. ENG 052-2018 (Attachment E);
    b. Providing a cul-de-sac for a turnaround on Pratt Street as described in the Works and Services Requirements (Attachment J); and
    c. Realignment of Discovery Trail through Hazelwood Cemetery to align it to the new Maclure Road/Elmwood connector. Refer to Figure 13.

55. The developer is responsible to adhere to all other legislation, which may apply to the land, including:

a. complying with all applicable City bylaws, such as Official Community Plan Bylaw, Development Bylaw, Tree Protection Bylaw, Building Bylaw, Sign Bylaw, Erosion and Sediment Control Bylaw, and Development Cost Charges Imposition Bylaw administered by the City; and

b. obtaining all other necessary approvals and permits on such terms as they may be issued, including but not limited to a development permit, tree removal permit, subdivision approval, building permit, soil removal/deposit permit, Ministry of Health permit, Ministry of Transportation and Infrastructure approval and Ministry of Environment approval.

Communication Plan

If supported by Council, Bylaw No. 3514-2024, "Abbotsford Official Community Plan Bylaw, Amendment Bylaw No. 025 will proceed to a Regular Meeting of Council, where it will be considered for first and second readings. If the proposed OCP Bylaw is supported by Council the Bylaw will then proceed to an upcoming Public Hearing. The City will notify, in writing, the owners and occupiers of land within a 250 meter radius of the property and copies of all correspondence received will be provided to Council. Two advertisements for the Public Hearing will be published in the City Page of the local newspaper.

The City received confirmation on January 29, 2024 that the applicant installed the required Development Notification Sign in accordance with the Development Application Procedures Bylaw, which requires the sign to be installed a minimum of 4 weeks in advance of Council's consideration of the application.

FINANCIAL PLAN IMPLICATION

Any capital works implications arising from this application have been addressed through the rezoning process.

Any fees and charges collected, as mentioned in the recommendation section, will be credited to City's various revenue or deposit accounts.

Komal Basatia

Komal Basatia
General Manager, Finance and Procurement Services
Signed 2/20/2024 8:50 AM

IMPACTS ON COUNCIL POLICIES, STRATEGIC PLAN AND/OR COUNCIL DIRECTION

Although an Official Community Plan (OCP) amendment is proposed, it is staff's opinion that the proposal meets the goals and objectives identified in the 2016 Official Community Plan, the Affordable Housing Strategy, and Council's 2022-2026 Strategic Plan which identifies four Guiding Principles: Inclusive and Connected Community, Sustainable and Safe City, Vibrant and Growing Economy and Organizational Excellence and Integrity.

SUBSTANTIATION OF RECOMMENDATION

The proposed Official Community Plan (OCP) amendment for the subject properties from Suburban to Urban 2 – Ground Oriented remains consistent with the broader goals and objectives of the OCP and Council's Strategic Plan. Furthermore, the proposed rezoning from Country Residential Zone (CR) to Multifamily Ground Oriented Zone (RMG) is consistent with the proposed OCP amendment, and if supported by Council, Natural Environment and Steep Slope Development Permit with Variance to Streamside Protection Bylaw is also presented concurrently for Council consideration.

Staff are of the opinion that the proposal will provide housing capable of meeting a diversity of household sizes, incomes, tenures and preferences. As such, staff support this application subject to the conditions outlined in the recommendations section.

Tahir Ahmed

Tahir Ahmed
Planner
Signed 2/16/2024 12:28 AM

Blake Collins

Blake Collins
Director, Development Planning
Signed 2/16/2024 2:35 PM

Mark Neill

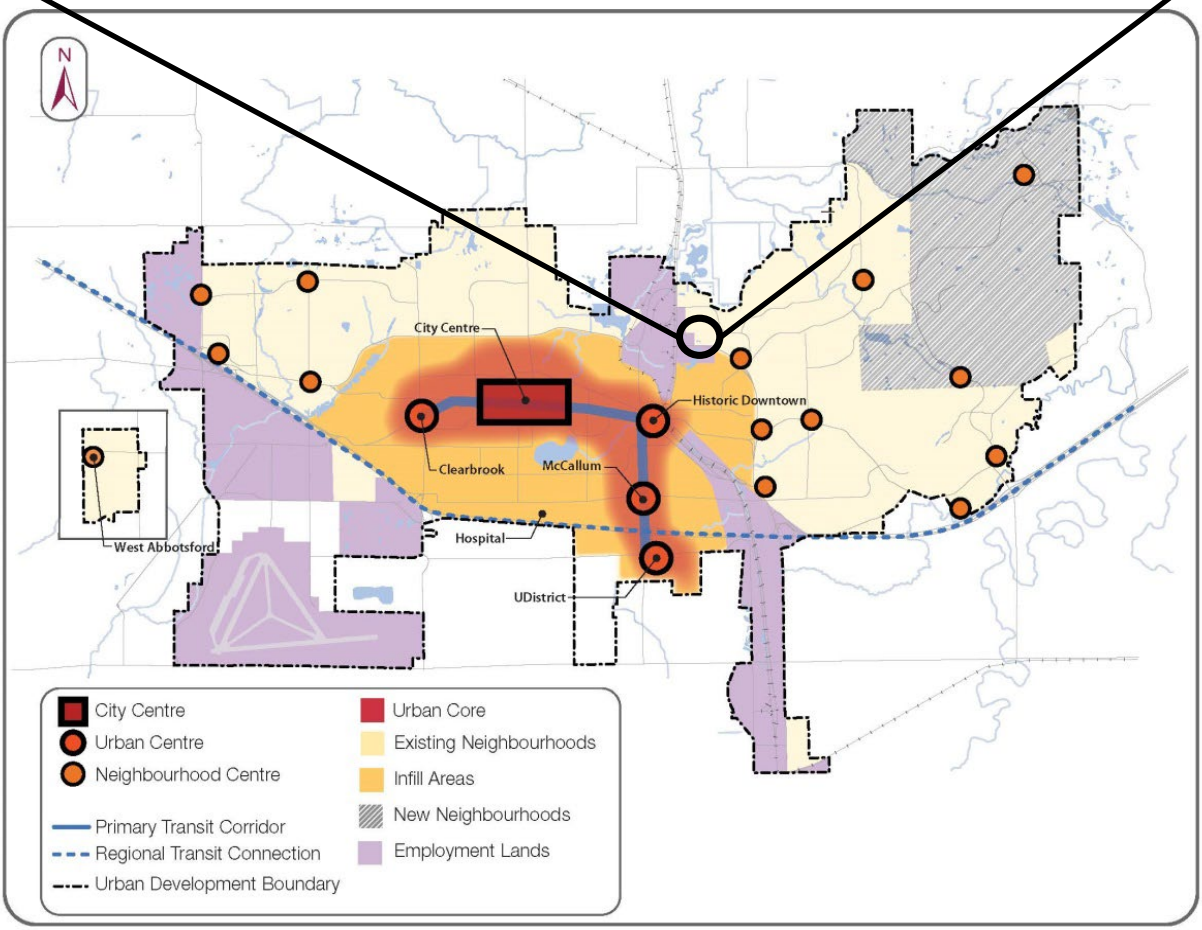
Mark Neill
General Manager, Planning and Development Services
Signed 2/20/2024 8:47 PM

ATTACHMENTS:

PRJ22-107 Figures 0-13
Attachment A - Draft Bylaw No. 3514-2024, Official Community Plan Bylaw, 2016, Amendment Bylaw No. 025
Attachment B - Draft Bylaw No. 3513-2024, Abbotsford Zoning Bylaw, 2014, Amendment Bylaw No. 601
Attachment C - Draft Development Permit with Variance No. 2446
Attachment D - Report No. PDS 034-2018, Official Community Plan Housekeeping Amendment
Attachment E - Report No. ENG 052-2018, Maclure - Hazelwood Area Transportation Network
Attachment F - Online Public Information Meeting Survey Response Report
Attachment G - In Person Public Information Meeting Comments
Attachment H - Geotechnical Assessment Report
Attachment I - Environmental Assessment Report
Attachment J - Works and Services Requirements
Attachment K - Arborist Report

City Context Plan

File: PRJ22-107 Location: 34010, 34024, 34040, 34056 and 34074 Maclure Road



ABBOTSFORD
Planning and Development Services

34010, 34024, 34040, 34056
and 34074 Maclure Road

Figure 1 - Location Plan
File No.: PRJ22-107

30 0 30
Meters

N

Date
2/7/2024

dwiebe

ABBOTSFORD
Planning and Development Services

34010, 34024, 34040, 34056 and 34074 Maclure Road

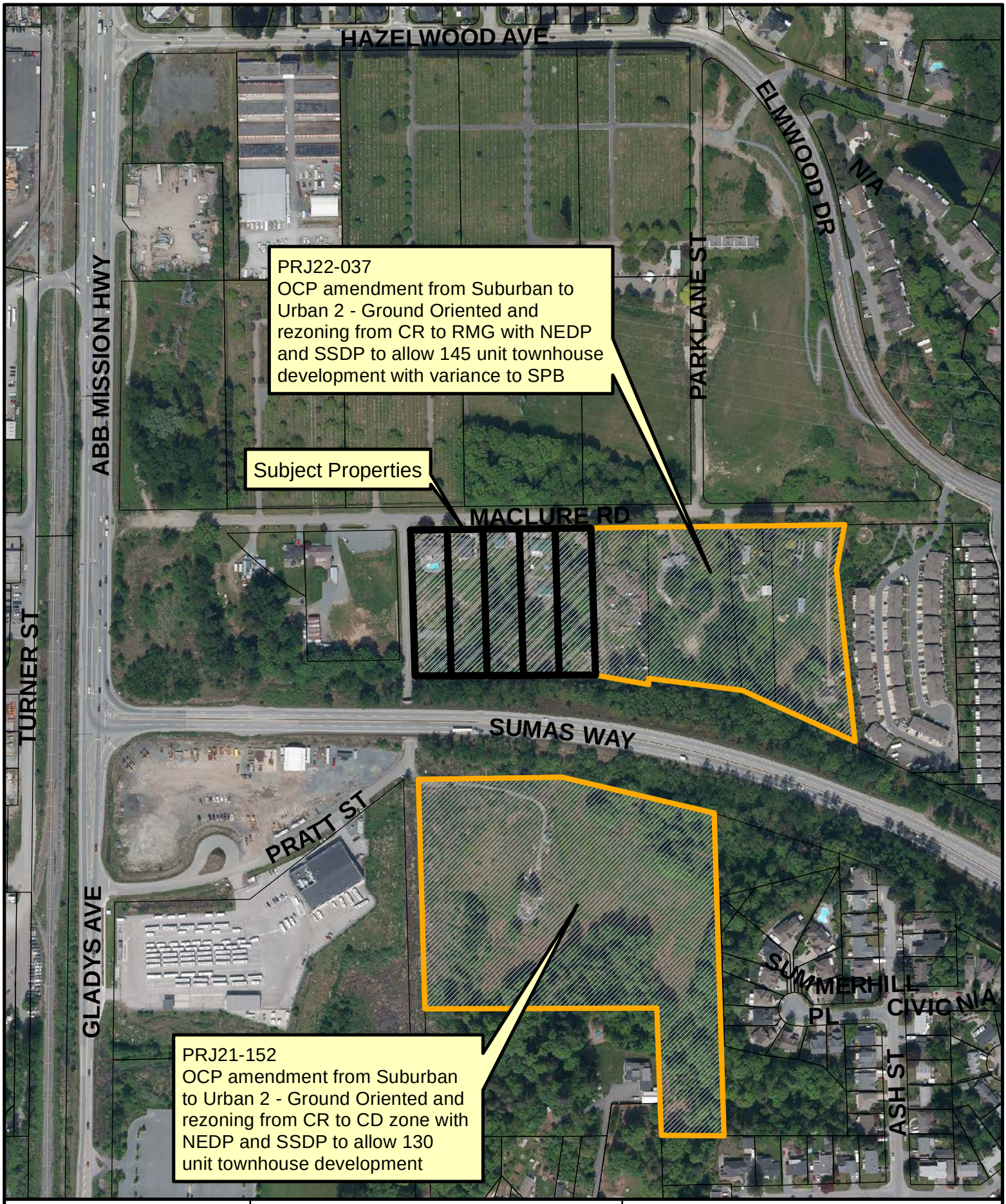
Figure 2 - Context Plan
File No.: PRJ22-107

50 0 150
Meters

N

Date
2/14/2024

dwiebe



ABBOTSFORD
Planning and Development Services

34010, 34024, 34040, 34056 and 34074 Maclure Road

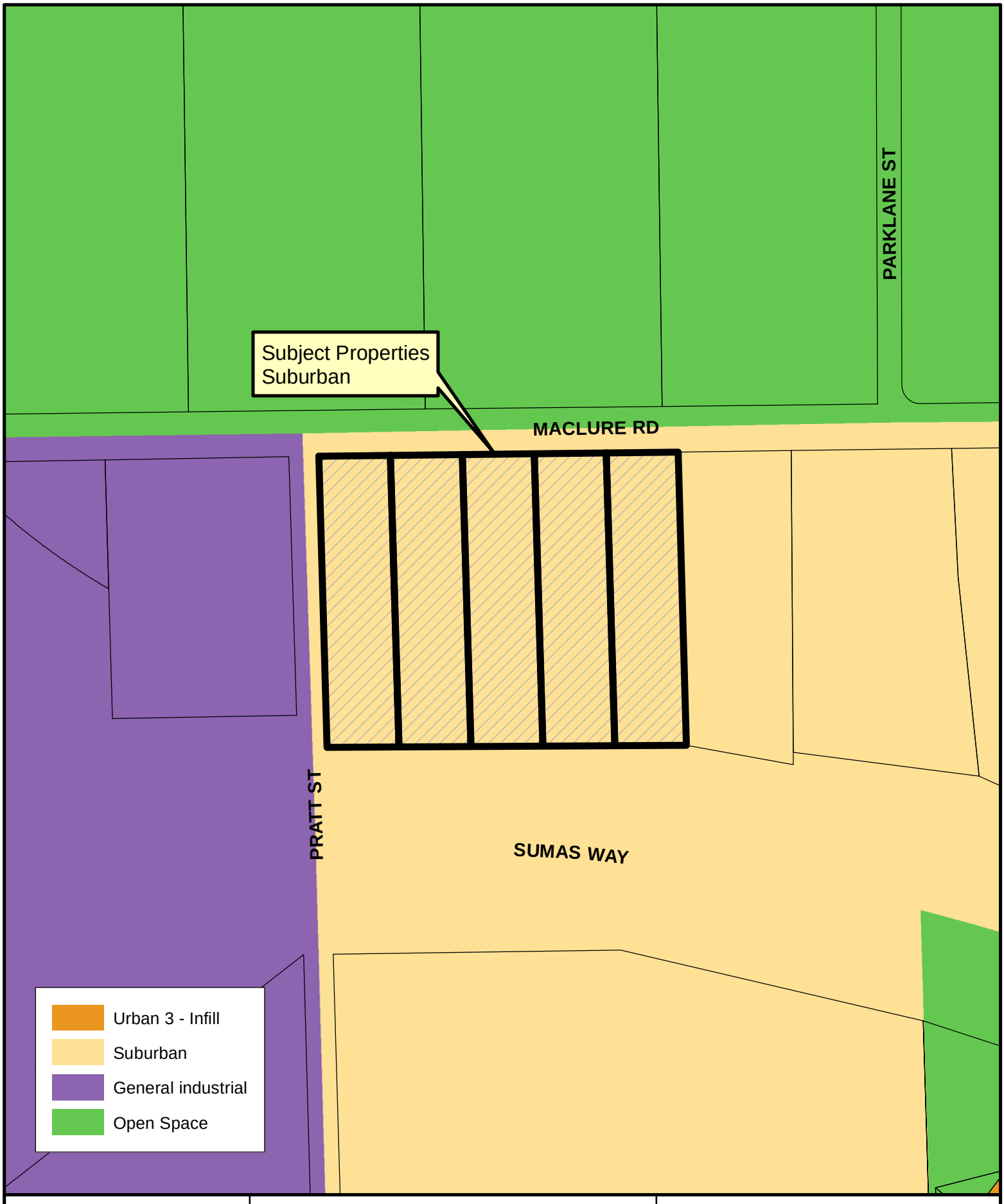
Figure 2a - Active Development Applications
File No.: PRJ22-107

50 0 100
Meters

N

Date
2/14/2024

dwiebe



ABBOTSFORD
Planning and Development Services

34010, 34024, 34040, 34056
and 34074 Maclure Road

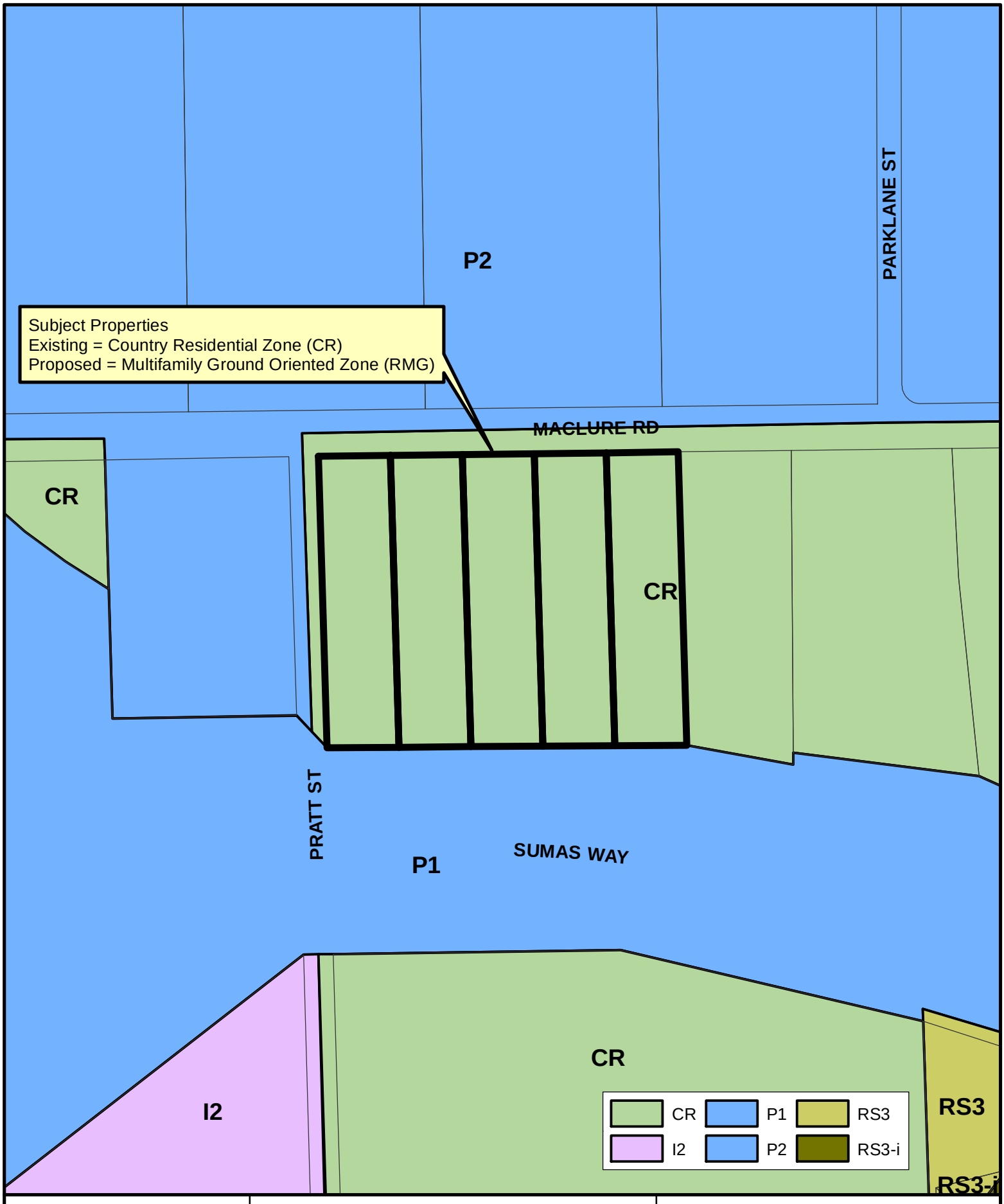
Figure 3 - Official Community Plan
File No.: PRJ22-107

40 0 40
Meters

N

Date
2/7/2024

dwiebe



ABBOTSFORD
Planning and Development Services

34010, 34024, 34040, 34056
and 34074 Maclure Road

Figure 4 - Existing & Proposed Zoning
File No.: PRJ22-107

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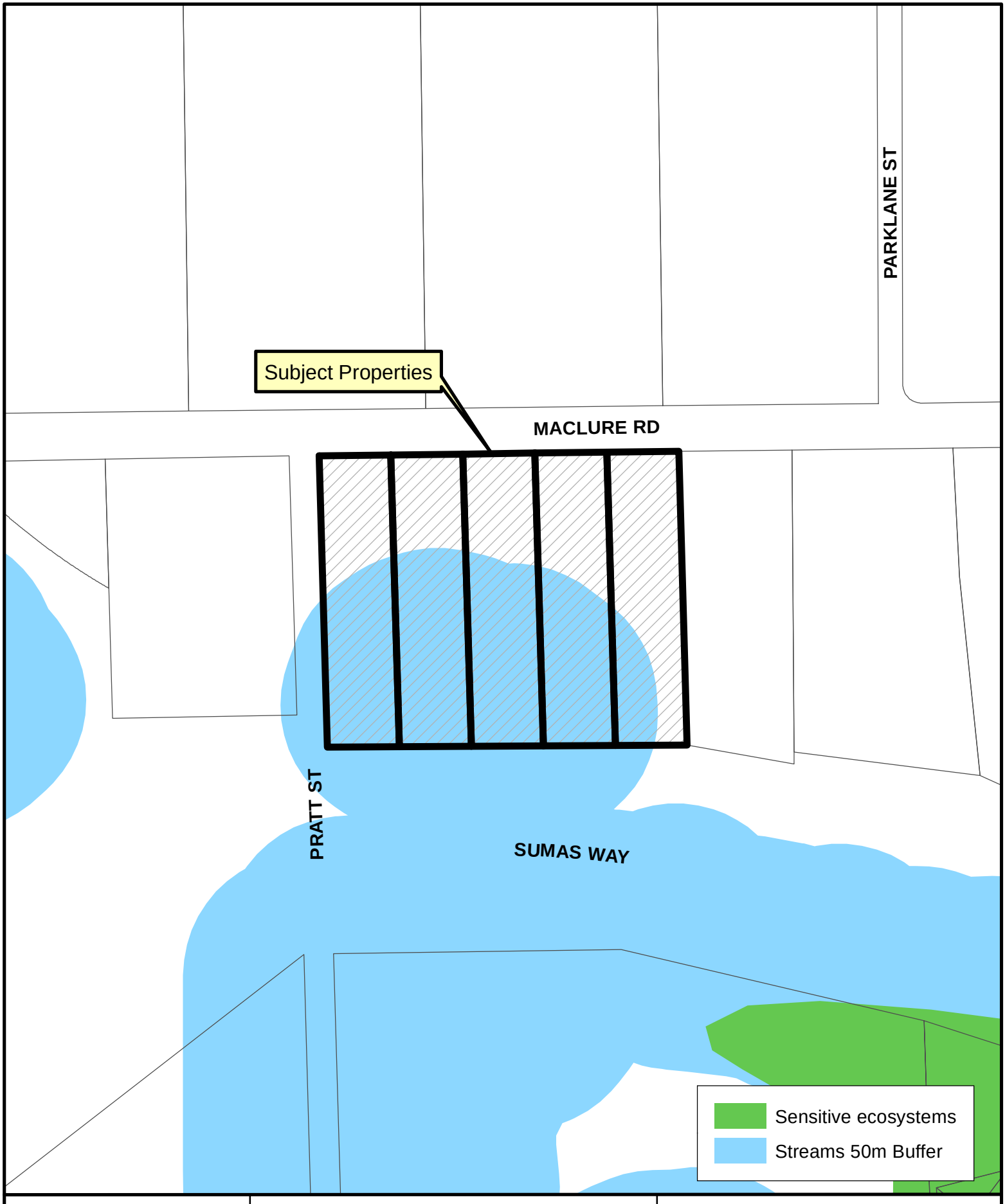
Meters

N

Date
2/7/2024

dwiebe



ABBOTSFORD
Planning and Development Services

34010, 34024, 34040, 34056
and 34074 Maclure Road

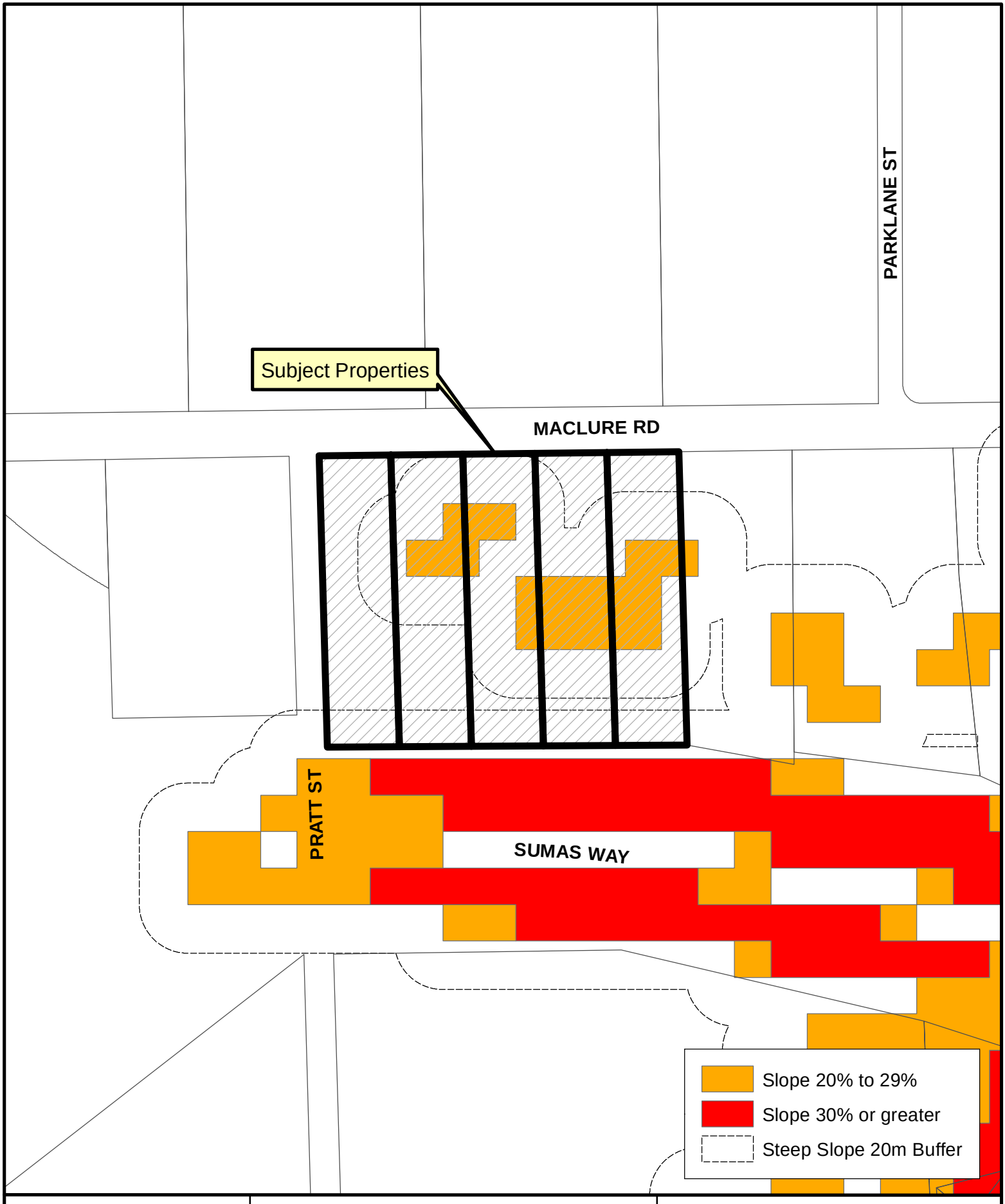
Figure 5 - Natural Environment
Development Permit
File No.: PRJ22-107

40 0 40
Meters

N

Date
2/8/2024

dwiebe



ABBOTSFORD
Planning and Development Services

34010, 34024, 34040, 34056
and 34074 Maclure Road

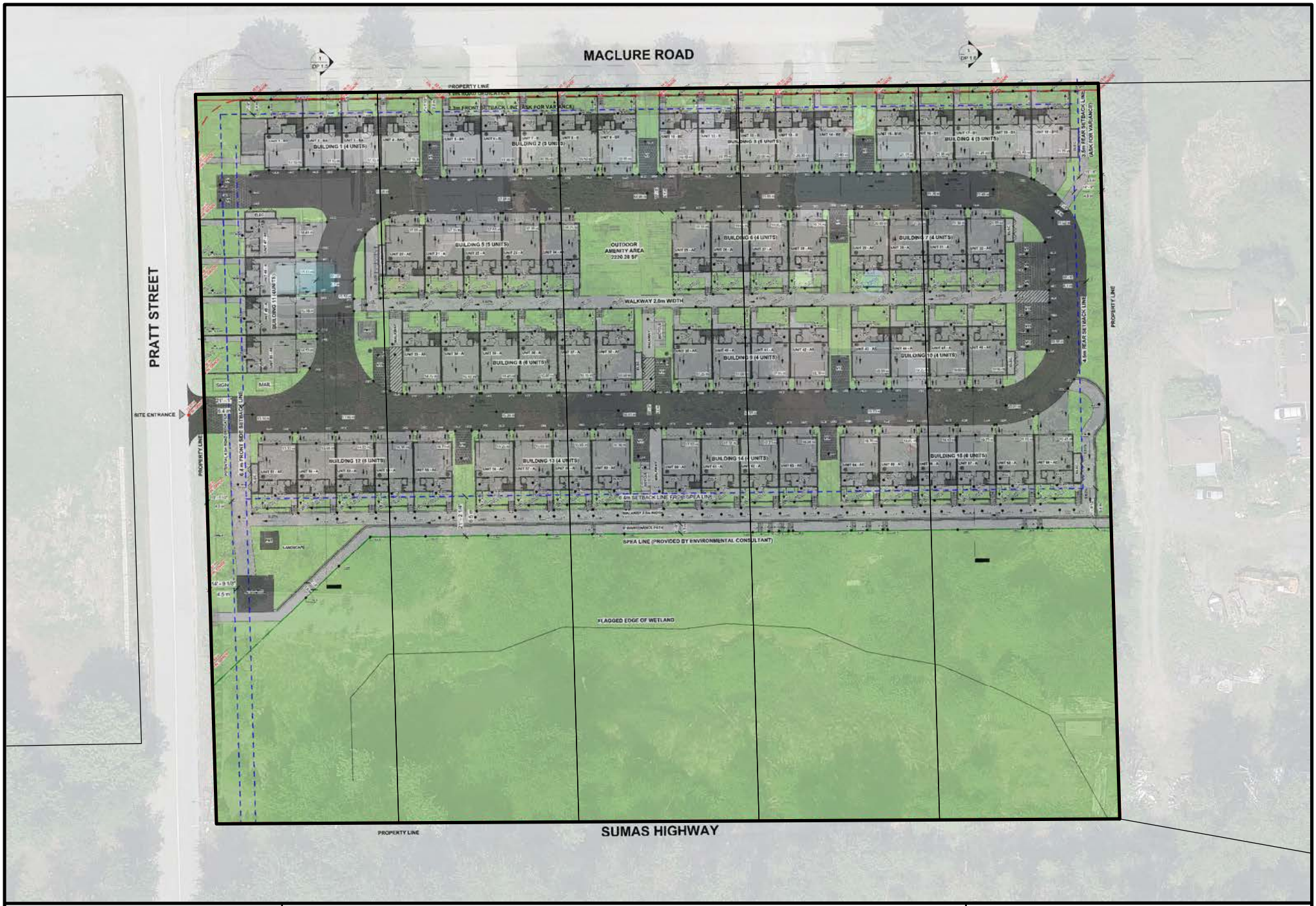
Figure 6 - Steep Slope
Development Permit
File No.: PRJ22-107

40 0 40
Meters

N

Date
2/7/2024

dwiebe



ABBOTSFORD
Planning and Development Services

34010, 34024, 34040, 34056 and 34074 Maclure Road

Figure 7 - Site Plan with Variance
File No.: PRJ22-107

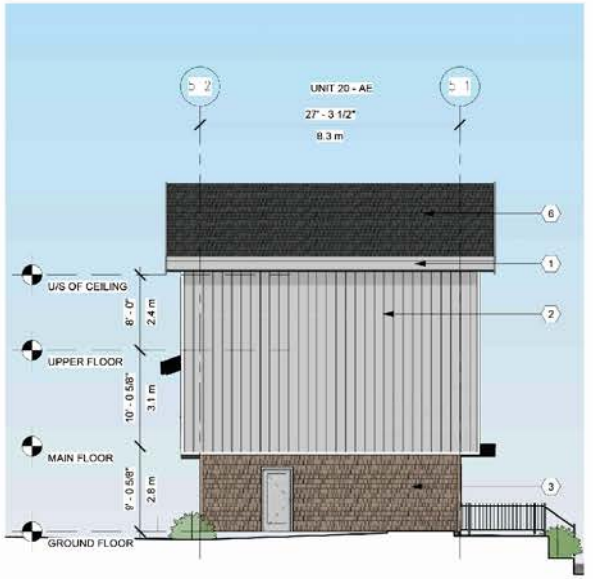
10 0 20
Meters

N

Date
2/8/2024

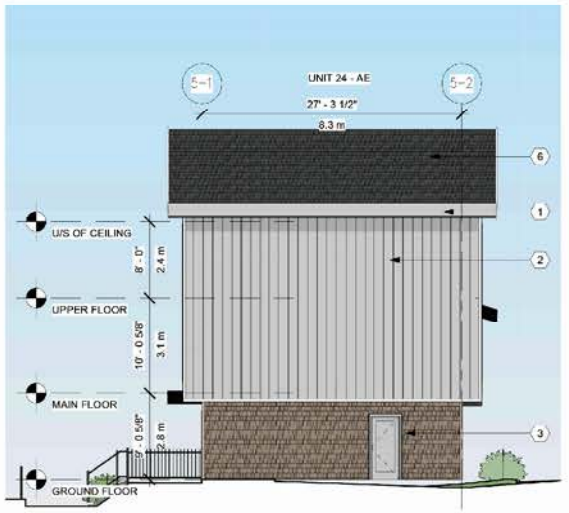
dwiebe

BUILDING 5 (SCHEME 1) - SOUTH ELEVATION



BUILDING 5 (SCHEME 1) - EAST ELEVATION

BUILDING 5 (SCHEME 1) - NORTH ELEVATION



BUILDING 5 (SCHEME 1) - WEST ELEVATION

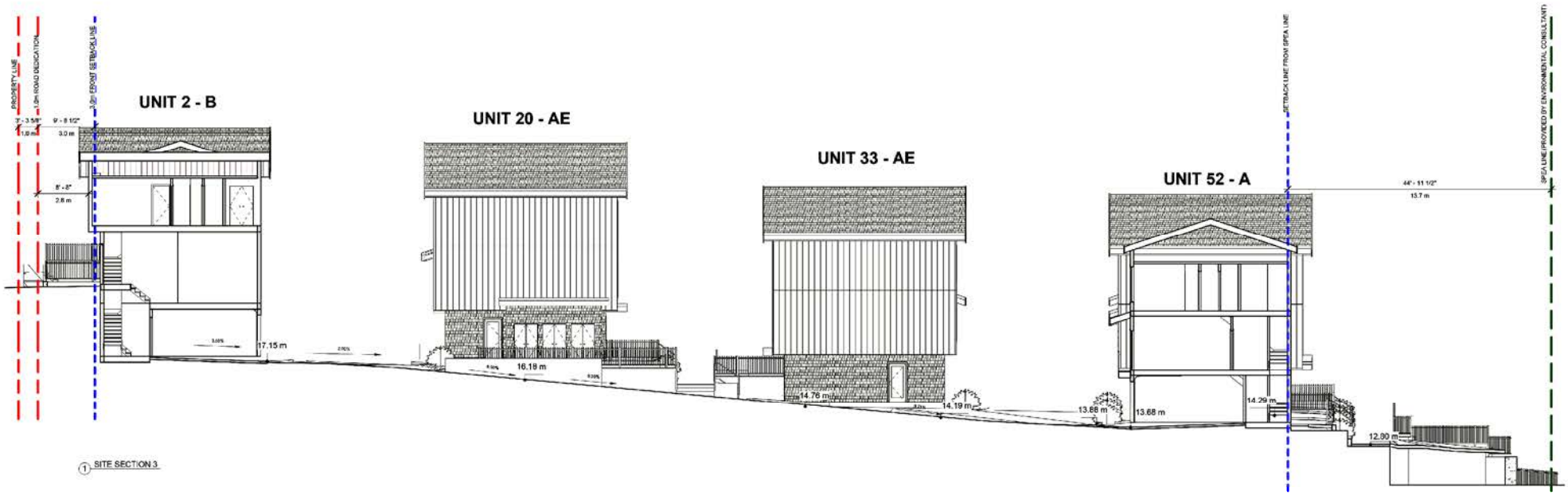
ABBOTSFORD
Planning and Development Services

34010, 34024, 34040, 34056 and 34074 Maclure Road

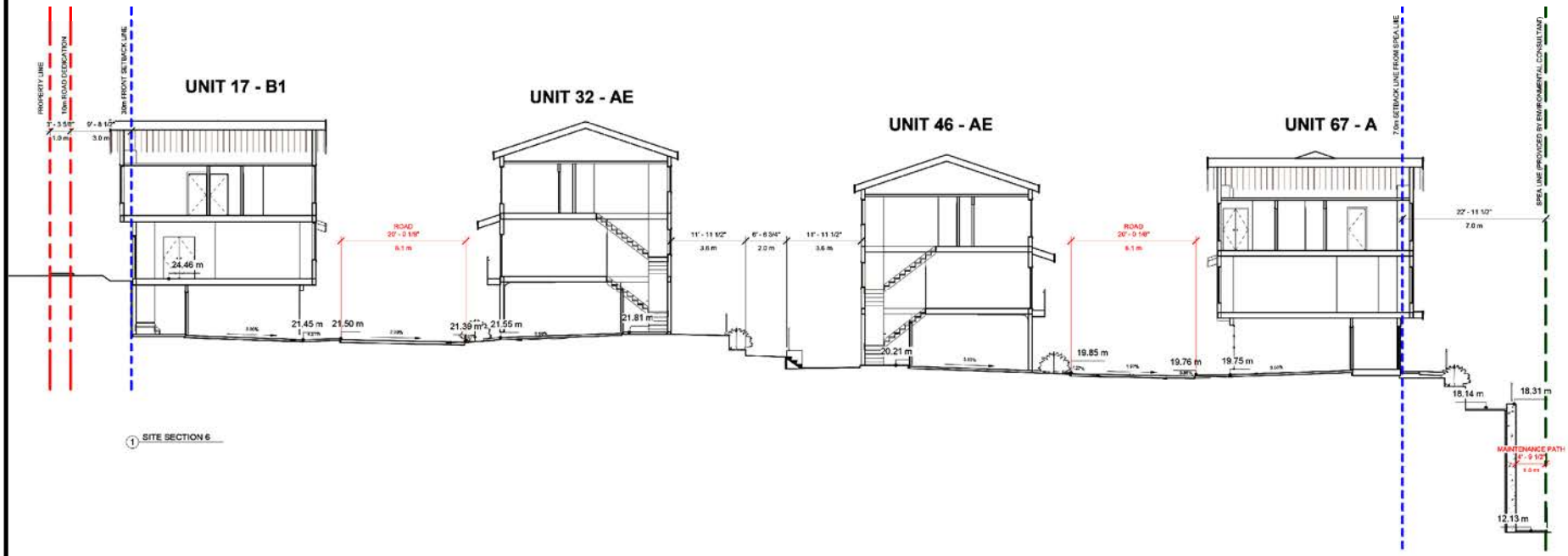
Figure 8 - Elevations
File No.: PRJ22-107

Date
2/8/2024

dwiebe



1 SITE SECTION 3



1 SITE SECTION 6

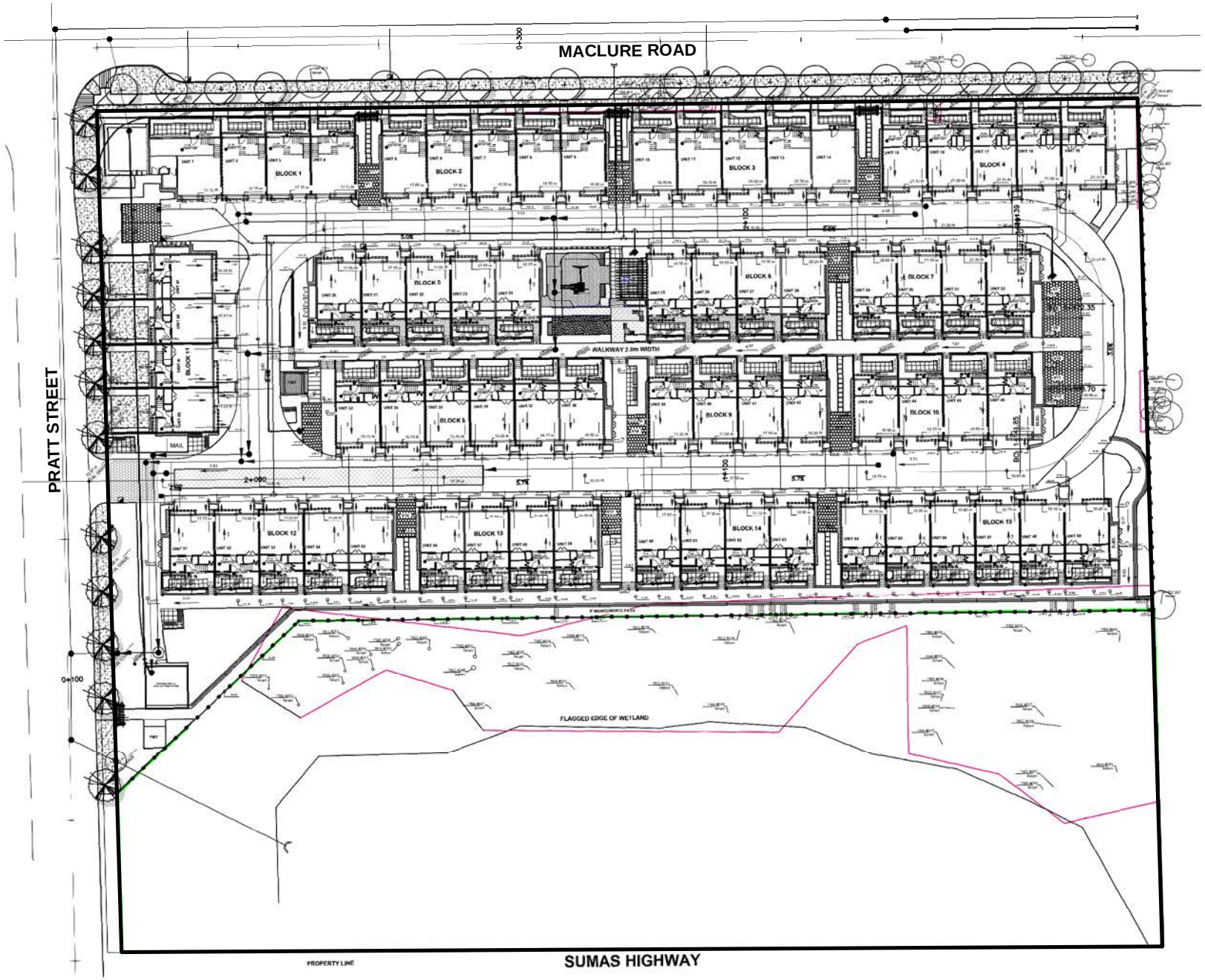
ABBOTSFORD
Planning and Development Services

34010, 34024, 34040, 34056 and 34074 Maclure Road

Figure 9 - Site Cross Sections
File No.: PRJ22-107

Date
2/8/2024

dwiebe



ABBOTSFORD
Planning and Development Services

34010, 34024, 40, 56 and 74 Maclure Road

Figure 10 - Landscape Plan
File No.: PRJ22-107

10 0 20
Meters

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Date
2/8/2024

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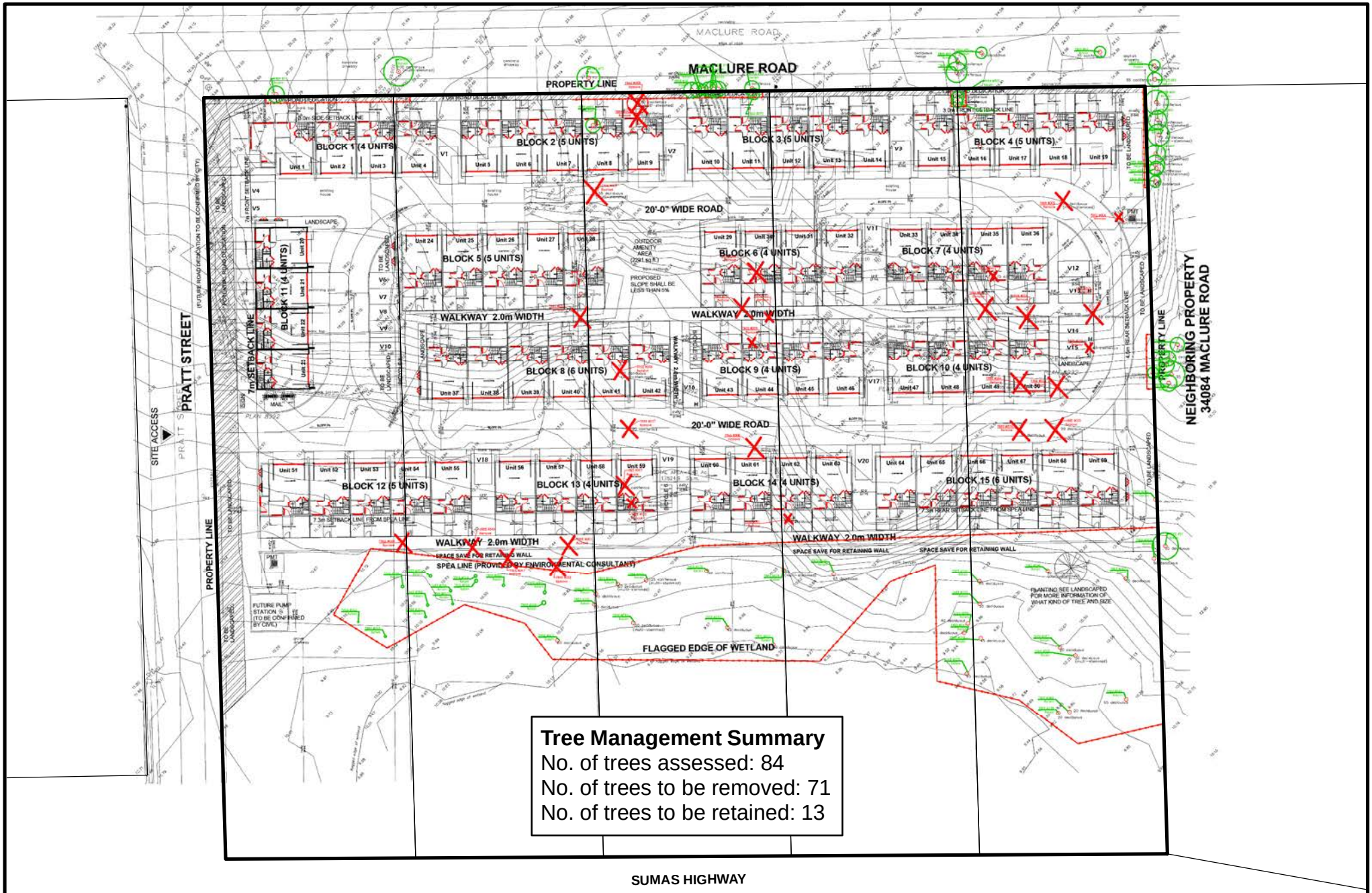


Tree Management Summary
No. of trees assessed: 84
No. of trees to be removed: 71
No. of trees to be retained: 13

ABBOTSFORD
Planning and Development Services

34010, 34024, 34040, 34056 and 34074 Maclure Road

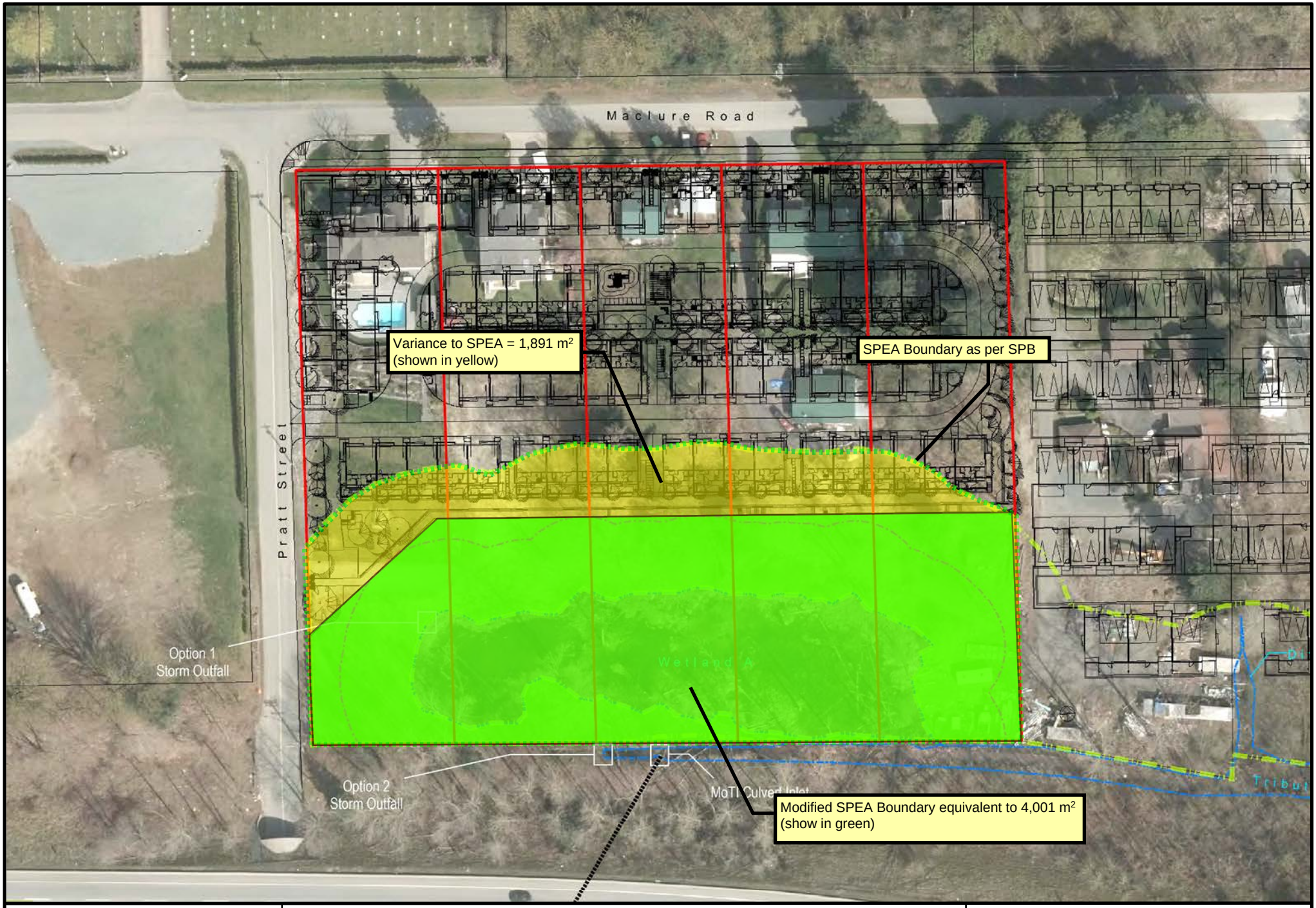
Figure 11 - Tree Management Plan
File No.: PRJ22-107

10 0 20
Meters

N

Date
2/8/2024

dwiebe



ABBOTSFORD
Planning and Development Services

34010, 34024, 34040, 34056 and 34074 Maclure Road

Figure 12 - SPEA Variance
File No.: PRJ22-107

Date
2/8/2024

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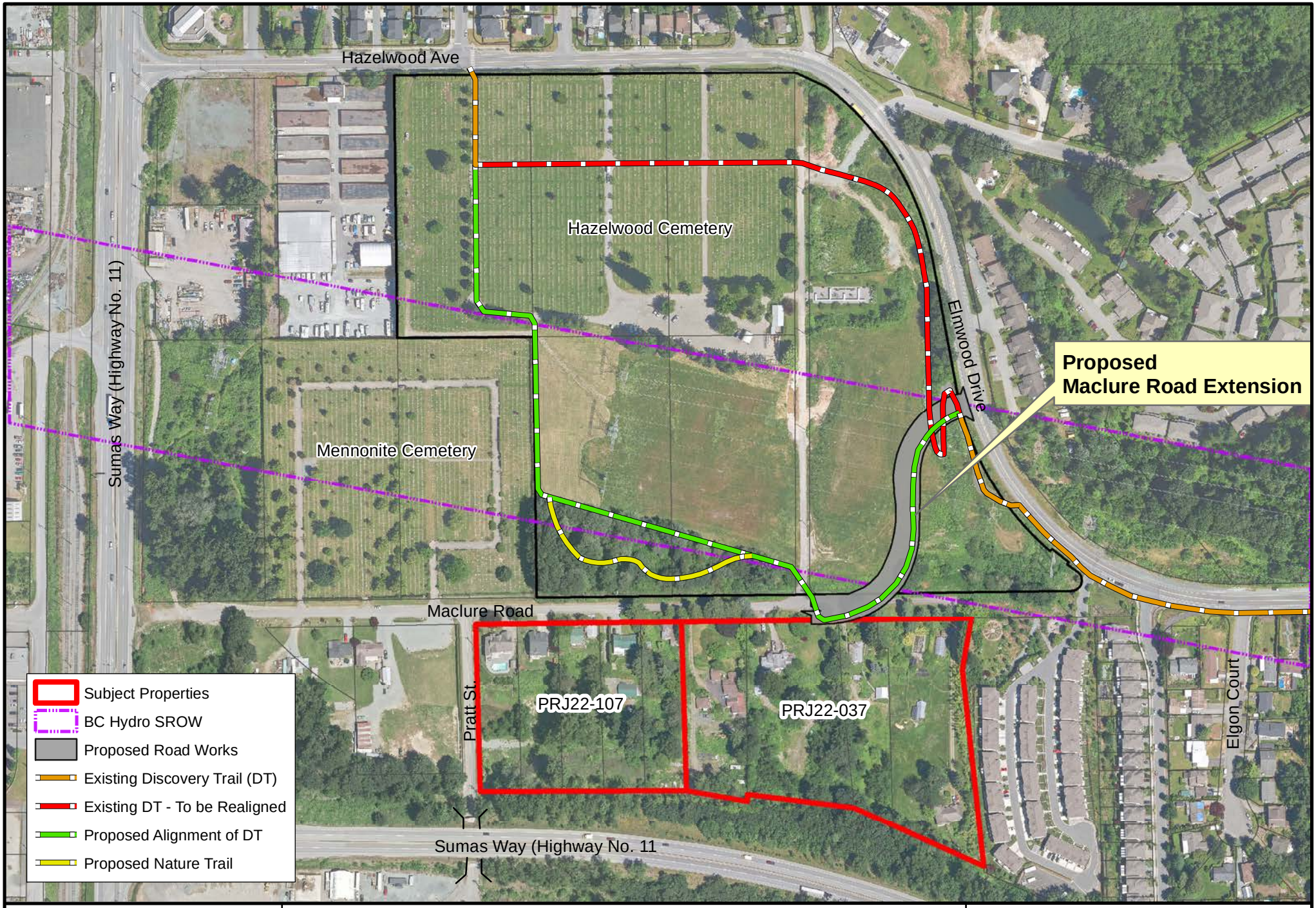


ABBOTSFORD
Planning and Development Services

Proposed Maclure Road Extension

Figure 13 - Maclure Road Extention
File No.: PRJ22-107

50 0 100
Meters

N

Date
2/14/2024

kperrin

CITY OF ABBOTSFORD

OFFICIAL COMMUNITY PLAN BYLAW, 2016, AMENDMENT BYLAW NO. 025

Bylaw No. 3514-2024 PRJ22-107

The Council of the City of Abbotsford, in open meeting assembled, enacts as follows:

1. CITATION

Bylaw No. 3514-2024 may be cited as "Official Community Plan Bylaw, 2016, Amendment Bylaw No. 025".

2. CHANGES DESIGNATION

Official Community Plan Bylaw, 2016, as amended, is further amended, by changing the designation of the lands as set out in the attached Appendix "A" and located at 34010, 34024, 34040, 34056 and 34074 Maclure Road:

From: Suburban

To: Urban 2 – Ground Oriented

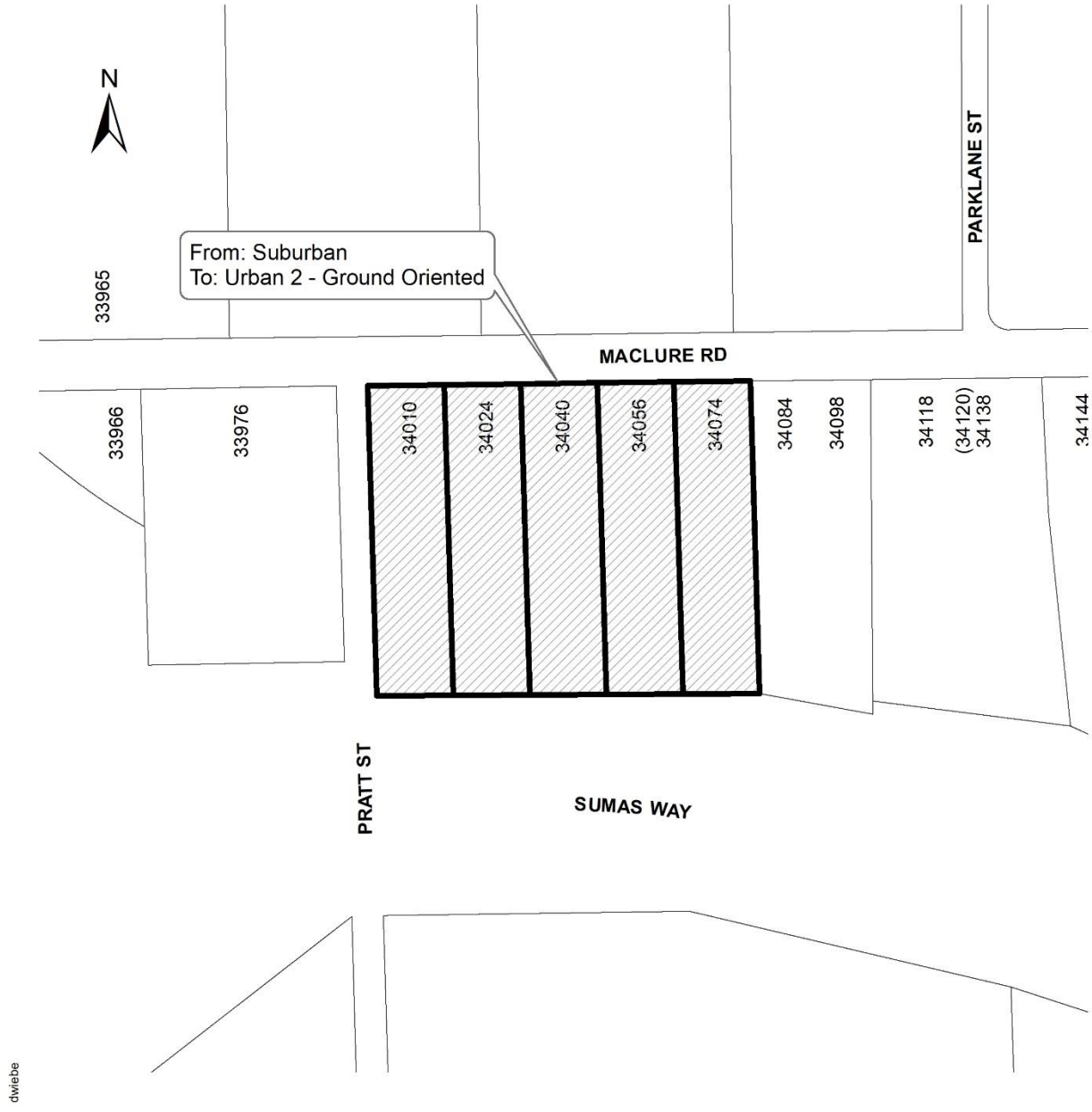
READ A FIRST TIME this	day of	, 20__
READ A SECOND TIME this	day of	, 20__
PUBLIC HEARING HELD this	day of	, 20__
READ A THIRD TIME this	day of	, 20__
ADOPTED this	day of	, 20__

CITY OF ABBOTSFORD

OFFICIAL COMMUNITY PLAN BYLAW, 2016, AMENDMENT BYLAW NO. 025

Bylaw No. 3514-2024 PRJ22-107

APPENDIX “A”



CITY OF ABBOTSFORD

ABBOTSFORD ZONING BYLAW, 2014, AMENDMENT BYLAW NO. 601

Bylaw No. 3513-2024 PRJ22-107

The Council of the City of Abbotsford, in open meeting assembled, enacts as follows:

1. CITATION

Bylaw No. 3513-2024 may be cited as "Abbotsford Zoning Bylaw, 2014, Amendment Bylaw No. 601".

2. AMENDS ZONING MAPS

Abbotsford Zoning Bylaw, *2014*, Schedule "D", Urban Area Zoning, as amended, is further amended by changing the zoning of the lands as set out in the attached Appendix "A" and located at 34010, 34024, 34040, 34056 and 34074 Maclure Road:

From: Country Residential Zone (CR)

To: Multifamily Ground Oriented Zone (RMG)

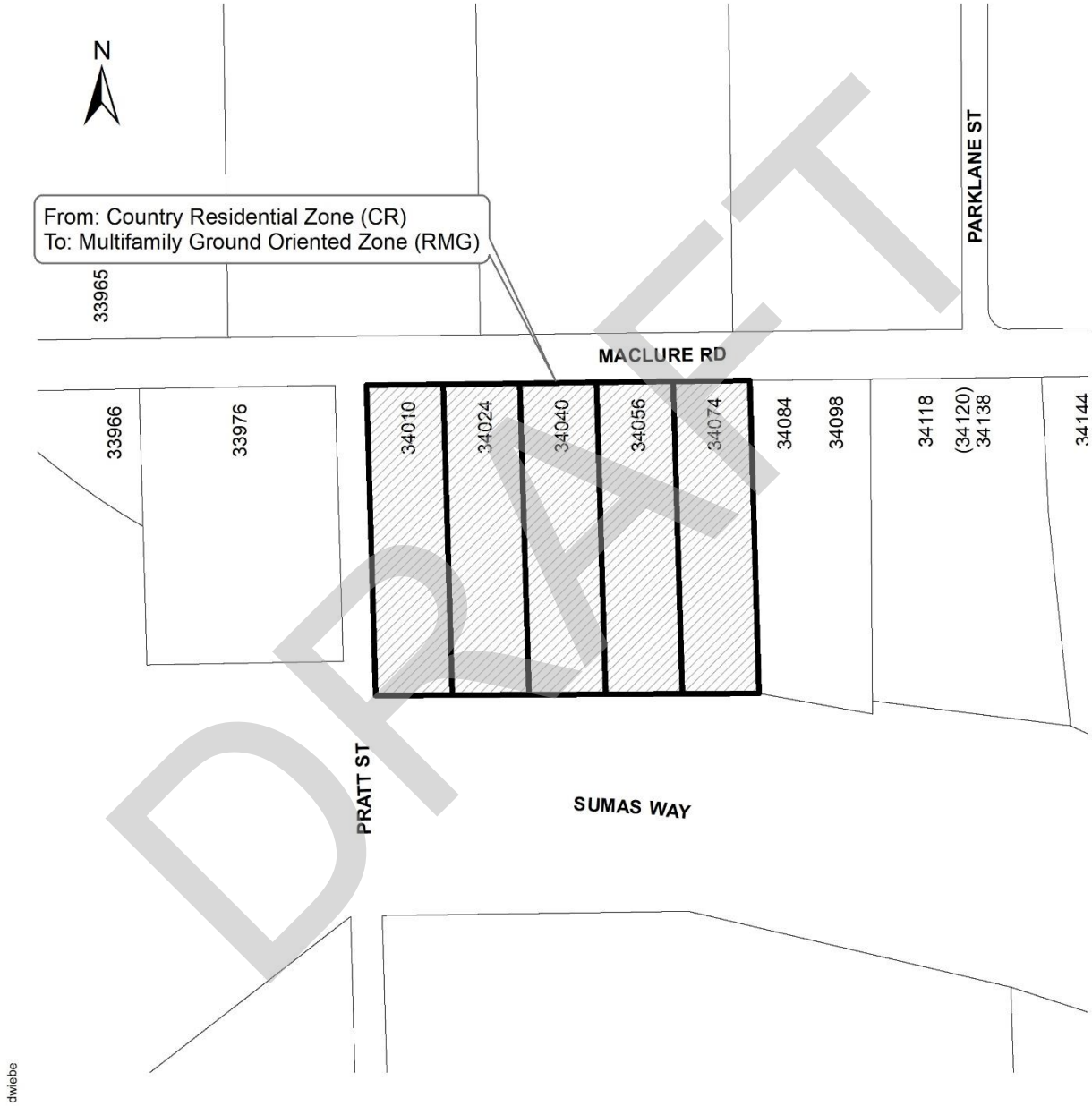
READ A FIRST TIME this	day of	, 20__
READ A SECOND TIME this	day of	, 20__
PUBLIC HEARING HELD this	day of	, 20__
READ A THIRD TIME this	day of	, 20__
APPROVED by the Minister of Transportation and Infrastructure this	day of	, 20__
ADOPTED this		

CITY OF ABBOTSFORD

ABBOTSFORD ZONING BYLAW, 2014, AMENDMENT BYLAW NO. 601

Bylaw No. 3513-2024 PRJ22-107

APPENDIX "A"



NATURAL ENVIRONMENT AND STEEP SLOPE DEVELOPMENT PERMIT NO. 2446

WITH VARIANCE TO STREAMSIDE PROTECTION BYLAW

1. This Development Permit No. 2446 with variance to Streamside Protection Bylaw as applied for under File No. PRJ22-107 is issued to the owner (the "Permittee") and shall apply only to that certain parcel or tract of land within the City of Abbotsford (the "City") described below, and any and all buildings, structures, and other development thereon and shall be binding on a purchaser of the Permittee's interest in the Lands, or portion thereof:

Parcel Identifier:	011-369-841, 011-369-868, 001-833-871, 009-681-566 and 001-005-162
Legal Description:	Lot 1 Except: Part on Statutory Right of Way Plan 75994; Section 22 Township 16 New Westminster District Plan 8992; Lot 2 Except: Part on Statutory Right of Way Plan 75994; Section 22 Township 16 New Westminster District Plan 8992; Lot 3 Except: Part on Statutory Right of Way Plan 75994; Section 22 Township 16 new Westminster District Plan 8992; Lot 4 Except: Part on Statutory Right of Way Plan 75994; Section 22 Township 16 New Westminster District Plan 8992; and Lot 5 Except: Part on Statutory Right of Way Plan 75994; Section 22 Township 16 New Westminster District Plan 8992 (the "Lands") <to be updated after the consolidation>

2. This Development Permit with variance ("DP") is issued pursuant to the *Local Government Act* and the City of Abbotsford Official Community Plan and in accordance with the applicable bylaws of the City, except as specifically varied or supplemented by this Permit.

Development Permit

3. The following DP works, terms and conditions ("DP Measures") shall apply to the Lands:

Prior to Commencement

a. No tree removal, site clearing, grubbing, stripping or mass grading shall be undertaken until:

i. the Erosion and Sediment Control (ESC) measures outlined in Section 3.c are installed by the Permittee or the Permittee's contractor and inspected by the ESC Supervisor;

ii. the Certified Arborist and/or Qualified Environmental Professional (QEP) confirms with the City that tree protective fencing and/or environmentally sensitive area fencing has been installed in material conformance with the Arborist Report and the Environmental Assessment report attached as Schedules B and Schedule C of the Tree Protection Bylaw;
iii. a Tree Removal Authorization Sign is installed along the frontage of the property and is visible from the street; and
iv. a pre-construction meeting is held with the City, the Permittee, the Erosion and Sediment Control Supervisor, the Qualified Environmental Professional, and the Permittee's contractor(s), and the Permittee has agreed to the conditions of the pre-construction meeting as evidenced by the Permittee's signature(s) on the pre-construction notes.

b. Prior to any development activities occurring on the property, the City must receive notice from the Ministry of Forests, Lands, Natural Resource Operations and Rural Development that the Riparian Areas Protection Regulation Assessment Report submitted to them by the QEP meets the assessment and reporting criteria for the Riparian Areas Protection Regulation.

Erosion and Sediment Control

c. Erosion and Sediment Control (ESC) measures shall be installed, monitored, and inspected in material conformance with the Erosion and Sediment Control Bylaw and the ESC Plan attached as Schedule(s) D (the "ESC Measures");

Tree Removal, Retention and Replacement

d. Tree removal and retention, the installation of temporary protective fencing, and any onsite monitoring by the Certified Arborist shall be completed in material conformance with the Tree Protection Report attached as Schedule B (the "Tree Retention, Protection, and Replacement Measures").

e. Tree replacement planting shall take place in material conformance with Schedule A, B and C;

f. The Permittee must hire a Qualified Professional to conduct a post-construction windfirm and hazard tree assessment around the clearing boundary and along the trail alignments, and conduct necessary mitigation works to render the lands safe for the intended use prior to release of security. Where trees proposed for retention are required to be removed following the post-construction assessment, the trees shall be replaced in accordance with the replacement requirements of either the Tree Protection Bylaw or the Province's 1996 Tree Replacement Criteria, as directed by the City.

g. All trees identified for retention must not be removed at any time unless the tree is deemed hazardous by a Certified Arborist and a Tree Cutting Permit is issued by the City.

Environmental Protection Measures

h. Habitat protection, mitigation, and compensation works shall be constructed, coordinated, monitored and inspected in material conformance with the Environmental Assessment Report and the Construction Environmental Management Plan (CEMP) (including any amendments), attached as Schedules E (the "Environmental Protection Measures");

Regular environmental monitoring reports must be submitted to the City, as outlined within the CEMP. The City may request additional monitoring and reporting as it deems necessary.

i. The Permittee or the Permittee's contractor shall take all necessary steps to avoid damaging any native vegetation within the streamside protection and enhancement area. If minor unanticipated temporary impacts occur, an assessment of the impacts will be undertaken by the Qualified Environmental Professional (QEP). The QEP will prepare a restoration, maintenance and monitoring plan for review and acceptance by the City. The City may withhold release of security until such time as the area is restored.

j. The Permittee or the Permittee's contractor must hire a QEP to conduct environmental monitoring of the development authorized under this Permit and to ensure that all of the Environmental Protection Measures are adhered to. The QEP is responsible for observing the methods of construction and submitting regular reports to the City on the compliance of the construction activities. The QEP shall:

    i. Ensure all best management practices and mitigation measures are in place to avoid and minimize environmental impact on fish and wildlife habitat as per the Environmental Protection Measures, as well as applicable senior government legislation such as but not limited to wildlife salvages and bird surveys;
    ii. In the event of an environmental incident or non-compliance with any of the Terms and Conditions of this DP, notify the City within 1 business day; and
    iii. Stop the work authorized under this Permit if deemed necessary to address risks to the environment. The QEP or their designate (specified in writing) must be on site during all phases of construction in and around the streamside protection and enhancement area to ensure compliance with the permit.

k. The Permittee must ensure that the mitigation and compensation works (including planting, coarse woody debris placement, etc.) required as part of the Environmental Protection Measures are completed and inspected by the QEP and the City prior to final acceptance.

l. The Permittee must ensure that all plants installed as part of the mitigation and compensation works achieve (100% survival for trees and 80% survival for shrubs OR other survivorship requirements recommended by QEP) during any year of the monitoring program. Should survival fall below this, the Permittee must immediately replant in order to meet the minimum survival rates.

m. The Permittee must remove all invasive plant species listed in the BC Weed Control Act regulation or identified for removal in the Environmental Assessment Report, garbage, concrete, debris, old fencing, etc. from the natural open space areas in accordance with Schedule C and E (the "Environmental Protection Measures") and to the acceptance of the City, prior to Substantial Completion or Final Occupancy, whichever comes first.

Mass Grading, Retaining Walls, Geotechnical Structures and Geotechnical Recommendations

n. Mass site grading, retaining walls, cut and fill slopes, and geotechnical structures shall be designed, installed, constructed and inspected by a Geotechnical Engineer and shall be in material conformance with the Mass Lot Grading Plan, Retaining Wall Plan and Mass Lot Grading Sections

attached as Schedule F and the Geotechnical Report attached as Schedule G (the "Geotechnical Measures"). All geotechnical structures and retaining walls exceeding 1.2m in height require issuance of a Building Permit from the City of Abbotsford.

o. The Permittee must hire a Qualified Professional to:

i. conduct a pre-construction hazard and slope stability assessment for the trails and upslope conditions,
ii. provide recommendations for any necessary mitigating actions for trail construction or use, and;
iii. verify that in their opinion, the trails are safe for the intended use.

Fees and Securities

4. For the due and proper completion of the DP Measures the following fees and securities are required:

a. For the due and proper completion of the DP Measures as set forth in Section 3.x to 3.x of this Permit, the Permittee shall deposit and maintain with the City security in the form of an irrevocable, auto-renewing letter of credit <in the sum of $<> or provide cash in the same amount (the "Security"), as outlined in subsections <a-x> below, until all the DP Measures are certified as complete by an applicable Qualified Professional and confirmed by an inspection by the City.

i. For section 3.x, the sum of $<>;
ii. For sections 3.x to 3.x, the sum of $<>.

The Security associated with the DP Works may be reduced proportionately as works are certified complete by an applicable qualified professional, except as outlined in section 4(b).

b. Upon City acceptance of the applicable monitoring reports from the QEP and confirmed by an inspection by the City, the Security associated with the Environmental Protection Measures may be reduced in the following stages:

c.

i. Post construction: Upon completion of the initial mitigation and compensation works (including <site preparation, topsoil, fencing, signage, construction monitoring>)
ii. End of <x> year maintenance period: Following the final year of the maintenance and monitoring period, all remaining security (including <plant purchase and installation, annual maintenance, annual site monitoring>)

Despite the above, the City may consider an alternative security release schedule depending on the site specific conditions.

d. In the event that the DP Measures are not completed as provided for in this Permit, the City may, at its option, enter upon the Lands to carry out, and complete the DP Measures, and recover the costs of so doing, including the costs of administration and supervision, from the Security deposited by the Permittee.

e. In accordance with the Development Application and Service Fee Bylaw pay to the City, upon execution of this agreement, the sum of $<> in payment of all environmental and engineering inspection and administration costs associated with the DP Measures.

Development Variances

5. Abbotsford Streamside Protection Bylaw, 2005 is varied as follows:

   a. Eliminate approximately 1,891 m^2 of Streamside Protection and Enhancement Area in general compliance with the attached Schedule A.

Permit Limitations

6. This Permit does not constitute subdivision approval, a Soil Removal/Deposit Permit, a Building Permit or Sign Permit and does not entitle the Permittee to undertake any work without the necessary approvals or permits. Site work must be in compliance with the Soil Deposit/Removal Bylaw, the Erosion and Sediment Control Bylaw and the Blasting Regulation Bylaw; other works must be constructed in accordance with engineering plans and specifications acceptable to the City's General Manager of Engineering; and buildings and structures can only be altered, changed in occupancy or constructed in accordance with the B.C. Building Code following issuance of a Building Permit.

7. This Permit does not constitute an approval under, or relieve the Permittee from complying with, any and all federal, provincial or municipal statute, regulation or bylaw governing the Permittee's use and development of the Lands.

8. If trees on the Lands are proposed to be felled during the critical bird breeding windows:

   - General: March 1st to August 31st;
   - Bald Eagle: January 1st to August 31st;
   - Osprey: April 1st to September 14th;
   - Heron: January 16th to September 14th;
   - Other Raptors: March 1st to September 31st;

   then an appropriately QEP must monitor compliance with all applicable provisions of the:

   - *Wildlife Act*;
   - *Migratory Birds Convention Act, 1994*;
   - any other federal or provincial environmental legislation governing the Permittee's use and development of the Lands;
   - the recommendations of the Provincial document, *Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia (2014)*; and
   - The recommendations of the Provincial document, *Guidelines for Raptor Conservation during Urban and Rural Land Development in BC (2013)*.

   The nests of an eagle, peregrine falcon, gyrfalcon, osprey, heron, or burrowing owl are protected under the *Wildlife Act*, regardless of nest activity (i.e. active or inactive) and as such, even if trees are proposed to be felled outside the critical bird breeding window, it is recommended that a QEP

undertake an assessment of the trees onsite to ensure that there are no nests of the aforementioned species.

Issuance / Expiry

9. This Permit expires if the permit holder does not substantially start any construction within two years from the date of issuance, in accordance with Section 504 of the *Local Government Act*.

AUTHORIZING RESOLUTION PASSED by Abbotsford City Council on the <> day of <>, 20<>.

THIS PERMIT IS ISSUED this day of , 20<>.

The Corporate Seal of the CITY OF ABBOTSFORD was hereunto affixed in the presence of:

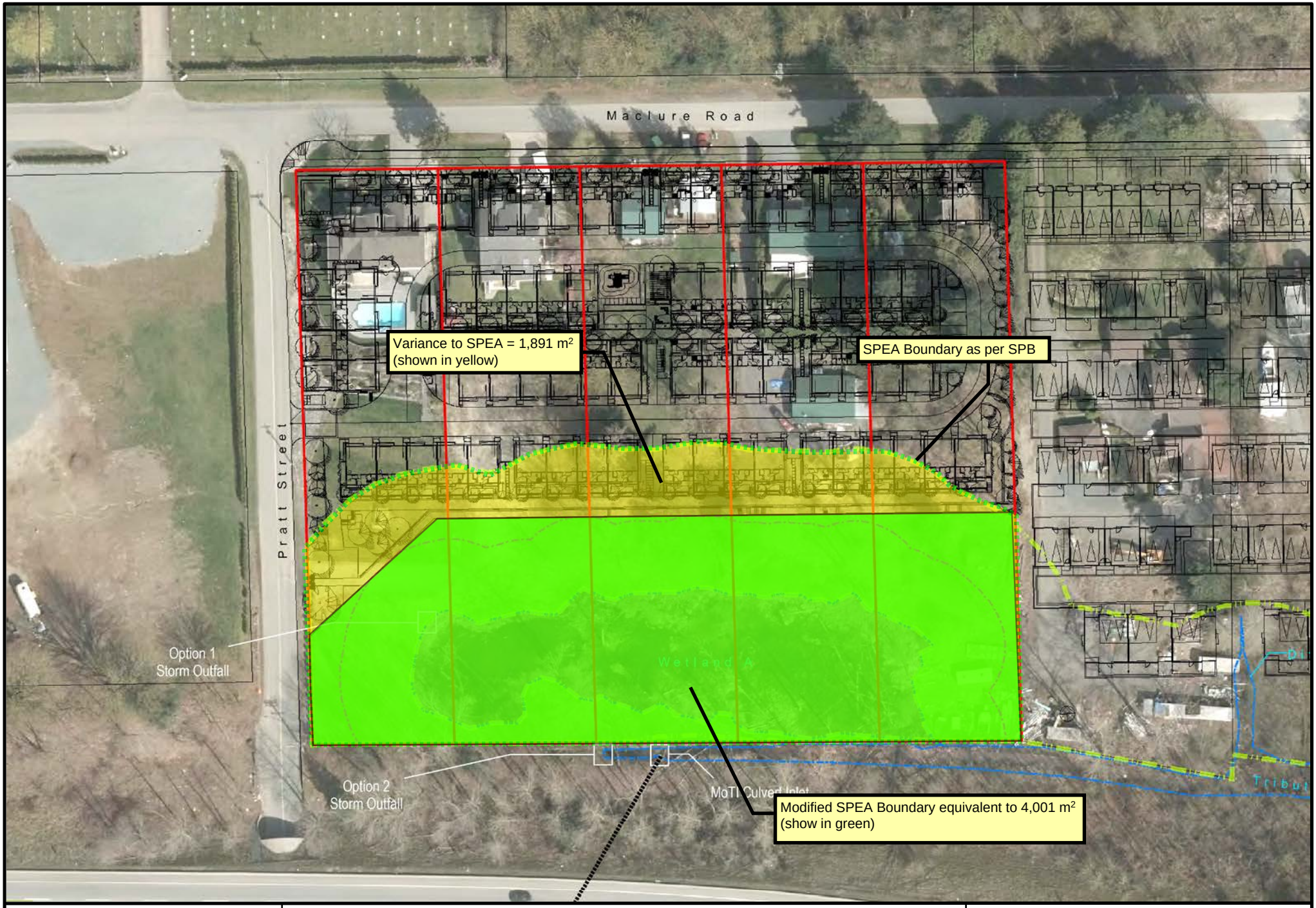
_____
Mayor, Ross Siemens

_____
City Clerk, Gabryel Joseph

Attachments:

[to be updated]

Schedule A: Draft DP with Variance No. 2446
Schedule B: Arborist Report prepared by Klimo and Associates dated July 29, 2021
Schedule C: Environmental Impact Assessment Report (Fish Habitat Assessment & Wildlife Habitat Report) prepared by BlueLines Environmental Ltd. dated Jun 10, 2022
Schedule D: Erosion and Sediment Control Plans
Schedule E: Construction Environmental Management Plan (CEMP)
Schedule F: Lot Grading Plans
Schedule G: Geotechnical Report, prepared by GeoWest Engineering dated June 6, 2022



ABBOTSFORD
Planning and Development Services

34010, 34024, 34040, 34056 and 34074 Maclure Road

Schedule A - Variance to SPB
File No.: PRJ22-107

Date
2/8/2024

dwiebe

COUNCIL REPORT

Regular Council

Report No. PDS 034-2018

Date: March 14, 2018
File No: 3100-35 OCP-001

To: Mayor and Council
From: Reuben Koole, Senior Planner
Subject: Official Community Plan Housekeeping Amendment - Public Hearing Input

RECOMMENDATION

THAT the report from the Senior Planner, regarding the Official Community Plan housekeeping amendment Public Hearing input, be received for information.

REPORT CONCURRENCE	
General Manager	**City Manager**
The General Manager concurs with the recommendation of this report.	The City Manager concurs with the recommendation of this report.

PURPOSE

This report presents an analysis of items raised at the Public Hearing for the Official Community Plan housekeeping amendment (Bylaw No. 2721-2018).

SUMMARY OF THE ISSUE

At the Public Hearing for the Official Community Plan (OCP) housekeeping amendment (Bylaw No. 2721-2018) on March 5, 2018, several items were brought to Council's attention by members of the public. This report presents staff's analysis for Council's information.

BACKGROUND

Five items were raised by two speakers. Two of the items were related to regulations and policies, and three items were related to land use designations. They are all summarized below for Council's information, and excerpts of the housekeeping bylaw related to the items are attached to this report for reference.

DISCUSSION

Regulation and Policy

Home Occupation, live/work uses

A speaker questioned if owner occupied dwellings that included home occupation and live/work situations require the home owner to also be the business owner (Figure 1).

Staff note these regulations are intentionally broad in the OCP and there are no prescriptions about whether a home occupation must be done by an owner occupier, and this is not a proposed change with the housekeeping amendment bylaw.

The City has more detailed regulations in other land use tools such as the Zoning Bylaw and Business Licence Bylaw that would prescribe additional requirements related to home occupation and live/work situations.

Accessory units and density

A speaker questioned why accessory units were not considered 'units' when calculating density (Figure 2).

Staff note this is an intentional regulation in the OCP and is not a proposed change with the housekeeping amendment bylaw. The density approach in the OCP aligns with the density approach in other City regulations such as the Zoning Bylaw and Development Cost Charge Bylaw, where accessory units (e.g. secondary suite) is not counted as a 'unit'.

Land Use Designation

34247 Farmer Road

A speaker raised a question about why the subject property was being changed to Agriculture (Figure 3).

Bylaw page number:	30
Current land use designation:	High Impact Industrial
Amended land use designation:	Agriculture

Reason for the change: The Agricultural Land Commission noted in their response to the 2016 Official Community Plan that this property was not part of the exclusion for the neighbouring property at 34295 Farmer Road, and requested that it be designated back to Agriculture. Staff note this change accommodates the ALC request and corrects a mistake made in the preparation of the 2016 OCP.

Riverside Road, southeast panhandle (PID: 007-618-816)

A speaker raised a question about why the subject property was being changed to High Impact Industrial (Figure 4).

Bylaw page number:	32
Current land use designation:	Open Space

Amended land use designation: High Impact Industrial

Reason for the change: This property has a small panhandle at the southeast corner that is adjacent to the current BC Transit maintenance yard. The panhandle is currently used as a driveway for the transit yard and functions as an extension of the facility. Staff note the adjacent maintenance yard is designated High Impact Industrial, and this change recognizes the current use of the panhandle.

Maclure Road properties

(34010, 34024, 34040, 34056, 34074, 34098, 34118, 34144, and 34164)

A speaker requested that 9 lots on Maclure Road be included in the housekeeping amendment to change the land use designation from Suburban to Urban 1 – Midrise. Reasons for this proposed change included proximity to amenities and historical OCP land use designations.

Staff analysis

The 2005 OCP designated the subject properties "Urban Residential", which had a maximum density of 16 units per hectare (uph), which increased to 30 uph along major roads. Sumas Way is identified as a major road so the subject properties had a maximum density of 30 uph in the 2005 OCP. This density would have allowed a compact lot single detached neighbourhood or low density townhouses (Figure 5).

The 2016 OCP established an urban structure based on a hierarchy of mixed use centres, supported by an urban core, and connected by a primary transit corridor. The intent of the structure was to grow in defined centres first, and support existing areas of amenities and services with greater population density.

The 2016 OCP designated the subject properties "Suburban", which has a maximum density of 2.5 uph. This designation was a reduction in density and accounted for 1) the urban structure of growing in the centres first, and 2) local access challenges with vehicle movements restricted to Pratt Street under Highway 11 (Figures 6 and 7).

Staff conclusion

Staff conclude that the 2016 OCP designation is appropriate based on the urban structure growth approach and existing access constraints of the site. However, this does not preclude changes to the area in the future. More detailed analysis of site access through Pratt Street is required to determine whether or not more density, and therefore more vehicle trips, could be accommodated. This analysis would be done through a site specific OCP amendment application rather than a broad housekeeping update. Staff also note that if the property owner(s) submitted an OCP amendment application to request an Urban 1 – Midrise designation for apartments, it would likely not be supported.

FINANCIAL PLAN IMPLICATION

There are no Financial Plan implications with respect to this report.

Komal Basatia

Komal Basatia
Director, Finance
Signed 3/12/2018 4:26 PM

IMPACTS ON COUNCIL POLICIES, STRATEGIC PLAN AND/OR COUNCIL DIRECTION

The OCP housekeeping amendment meets Council's strategic plan.

SUBSTANTIATION OF RECOMMENDATION

Several speakers raised items at the public hearing for the OCP housekeeping amendment on March 5, 2018. At Council's request, staff have provided additional information related to the items raised for Council's consideration.

Reuben Koole

Reuben Koole
Senior Planner
Signed 3/9/2018 2:40 PM

Mark Neill

Mark Neill
Director, Community Planning
Signed 3/12/2018 3:28 PM

Siri Bertelsen

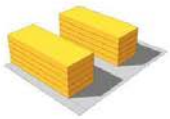
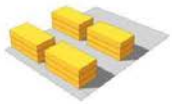
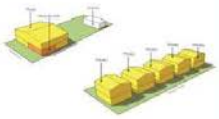
Siri Bertelsen
General Manager, Planning and Development Services
Signed 3/13/2018 10:34 AM

ATTACHMENTS:

Figure 1 - Home Occupation
Figure 2 - Accessory Units
Figure 3 - Farmer Road
Figure 4 - Riverside Road
Figure 5 - 2005 OCP
Figure 6 - 2016 OCP
Figure 7 - Maclure Road Photos

Appendix "T" (cont'd)

RESIDENTIAL NEIGHBOURHOODS

Name	Purpose and Description	Building Type and Height	Uses	Density (min and max)
Urban 1 – Midrise  Bylaw No. 2721-2018	• Enable multifamily housing to strengthen and support the Mixed Use Centres, and Primary Transit Corridor	Multi storey buildings including low and mid rises, and integrated ground oriented units. Heights are initially limited to 6 storeys (taller and varied building heights, and ground floor commercial, may be possible through a neighbourhood plan). Large sites (1 ha or greater) may incorporate ground oriented buildings	Multi unit residential Accessory commercial (associated with a residential care facility) Home occupation, live/work	1.0 to 2.0 FSR (up to 2.5 FSR on existing or consolidated properties that are 2,500m² or less)
Urban 2 – Ground Oriented 	• Enable multifamily housing to support Mixed Use Centres and/or to serve as transition areas near single detached neighbourhoods	Ground oriented multiplex, duplex, row or townhouses. Heights are limited to 3 storeys. Large sites (1 ha or greater) may incorporate multi storey buildings up to 4 storeys	Multi unit residential Accessory commercial (associated with a residential care facility) Home occupation, live/work	0.5 to 1.5 FSR
Urban 3 – Infill 	• Enable infill residential with density increases near City and Urban Centres and the Primary Transit Corridor in *Figure II.1*	Single detached dwellings, with some ground oriented duplexes Large sites (1 ha or greater) may incorporate ground oriented buildings up to 3 storeys	Residential with accessory units Home occupation, live/work	refer to "infill guidelines" following this table
Urban 4 – Detached 	• Enable low density single detached housing in neighbourhoods	Single detached dwellings, with some ground oriented duplexes Large sites (1 ha or greater) may incorporate ground oriented buildings up to 3 storeys	Residential with accessory secondary suite Home occupation, live/work	max 25 units per hectare (uph)

Appendix "T" (cont'd)

Name	Purpose and Description	Building Type and Height	Uses	Density (min and max)
Urban large lot 	• Enable single detached housing in a large lot format that may include modified municipal service standards such as water, sanitary, or roads	Single detached dwellings	Residential with accessory unit Home occupation, live/work	max 6.5 uph (gross density)
Suburban 	• Enable single detached housing with suburban character in limited areas that may include modified municipal service standards such as water, sanitary, or roads	Single detached dwellings	Residential with accessory unit Home occupation, live/work	max 2.5 uph (gross density)

Calculating Slope

Slope is calculated based on a 15m grid using conditions from the City's 2013 contour data, and is shown on Map 14 with the following intervals:

- 20-29%
- 30% and greater

Development applications may provide an alternate slope analysis, to the satisfaction of the City.

Accessory Units

Accessory units, including secondary suites and detached suites, are not considered units when calculating density.

New Neighbourhoods

In the New Neighbourhoods area shown on Maps 1 and 2, development will be phased in a manner to ensure details relating to infrastructure, environment, and land uses can be coordinated and implemented in a cost efficient manner. Development may occur in accordance with existing zoning.

Rezoning proposals that are consistent with the building type and density of an existing zone may be supported. New rezoning proposals that are not consistent with the building type and density of an existing zone will only be considered following the adoption of a neighbourhood plan.

Neighbourhood plans for these areas will be developed following the Neighbourhood Planning Framework described in Part IV.

Within this same area on Maps 1 and 2, approximate developable area is shown for illustration purposes. Detailed stream, steep slope, and environmental area mapping will be completed through the neighbourhood plan, thereby determining specific net developable areas.

Accessory Units

Accessory secondary suites are supported in all single detached dwellings subject to the following criteria:

- Not be on a cul-de-sac bulb
- Not be in a bare land strata (except where road infrastructure meets City bylaw standards)
- Have a minimum frontage of 12m
- Have a minimum lot size of 400m^2
- Be located on a Collector or Local road, as shown on Maps 4 and 5

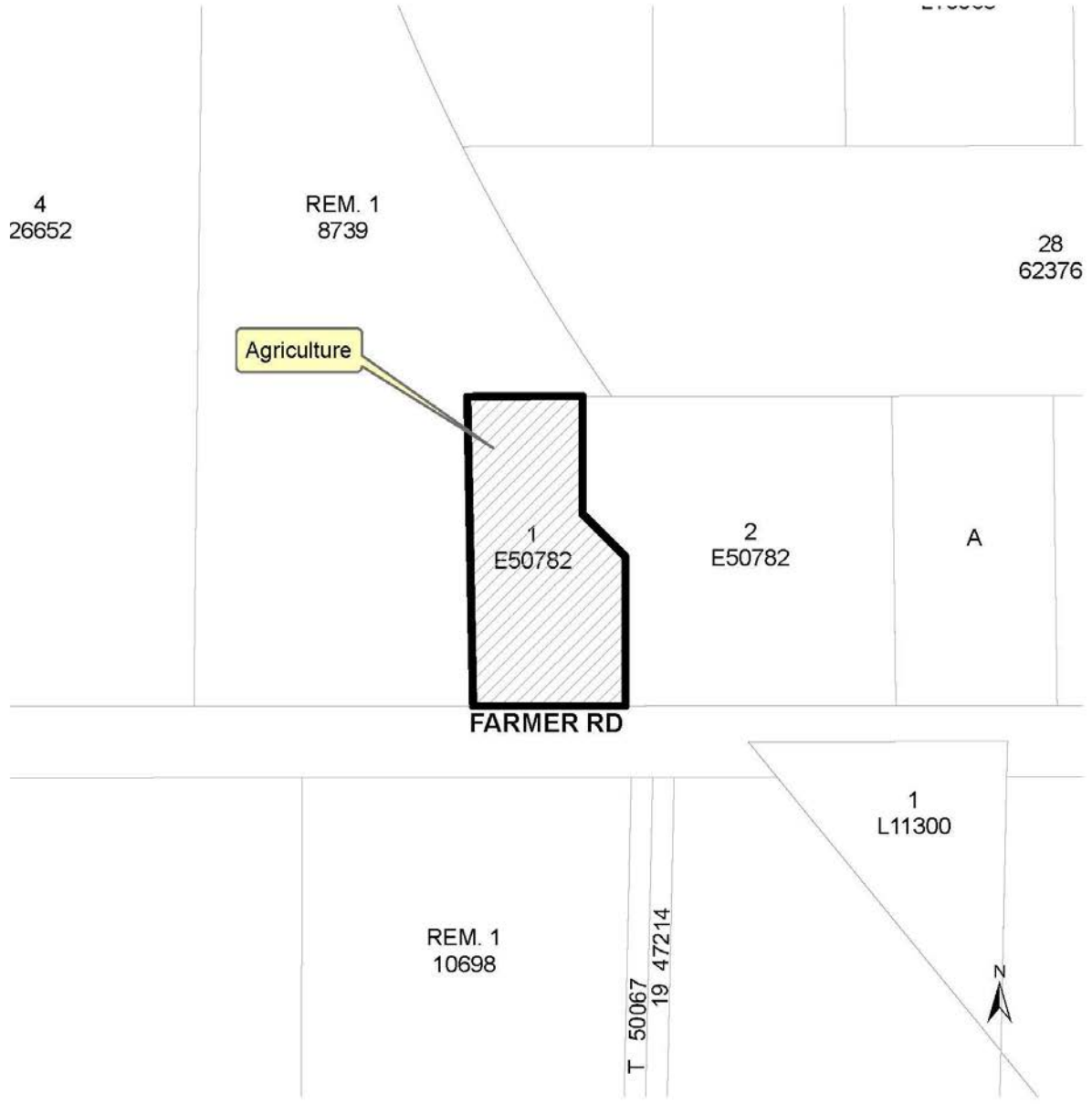
Bylaw No. 2721-2018

In the 'Urban 4 – Detached' land use designation where a lot has lane access, the accessory unit may be detached instead of secondary, subject to the following criteria:

- Have a minimum frontage of 9m
- Have a minimum lot size of 300m^2

Appendix "M"

APPENDIX "M"
SCHEDULE BYLAW NO. **2721-2018**
BEING ABBOTSFORD OFFICIAL COMMUNITY PLAN BYLAW, 2016,
AMENDMENT BYLAW NO. **1**
FROM: **High Impact Industrial**
TO: **Agriculture**

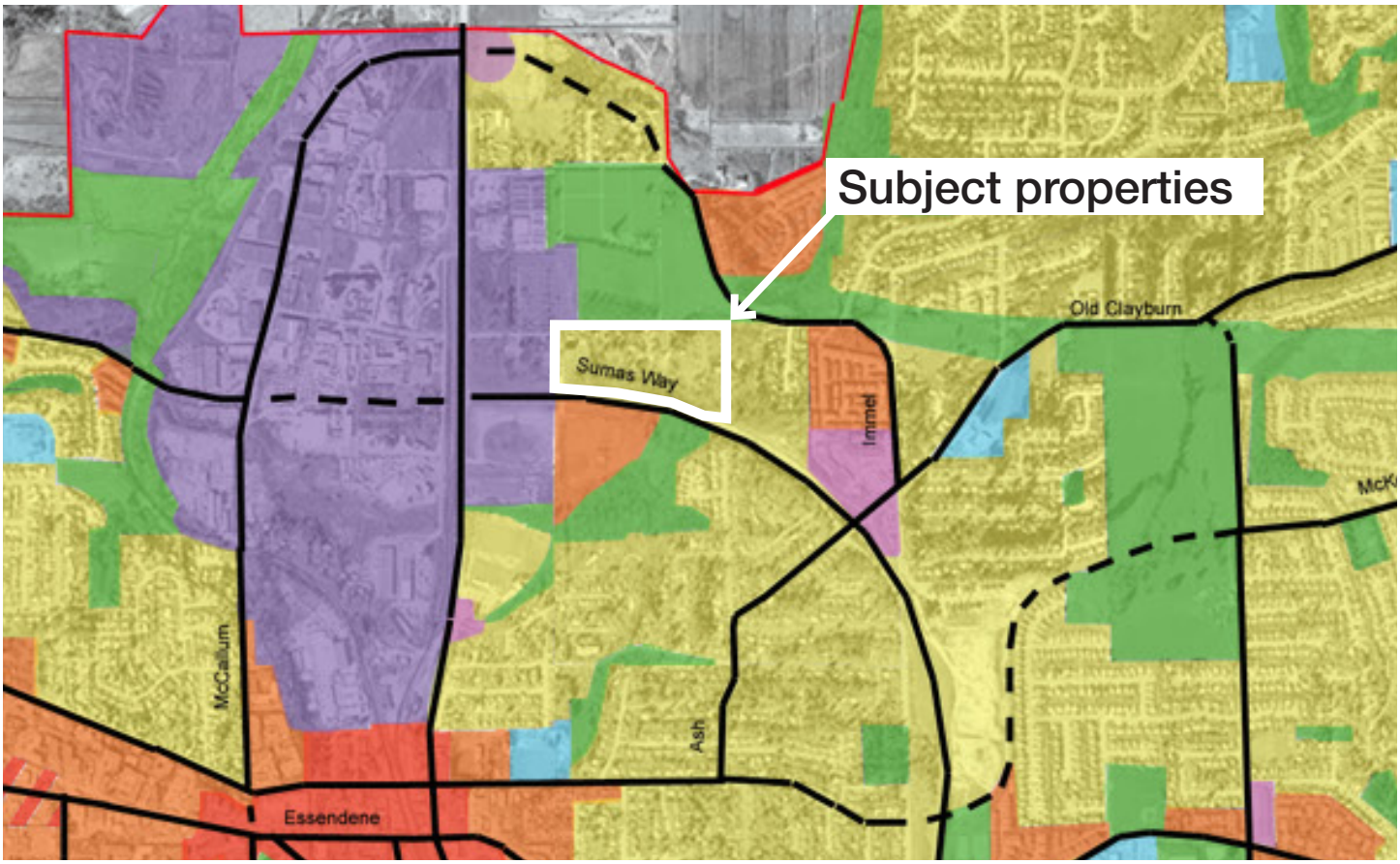


Appendix "O"

APPENDIX "O"
SCHEDULE BYLAW NO. **2721-2018**
BEING ABBOTSFORD OFFICIAL COMMUNITY PLAN BYLAW, 2016,
AMENDMENT BYLAW NO. **1**
FROM: **Open Space**
TO: **High Impact Industrial**

Figure 5.

2005 Official Community Plan

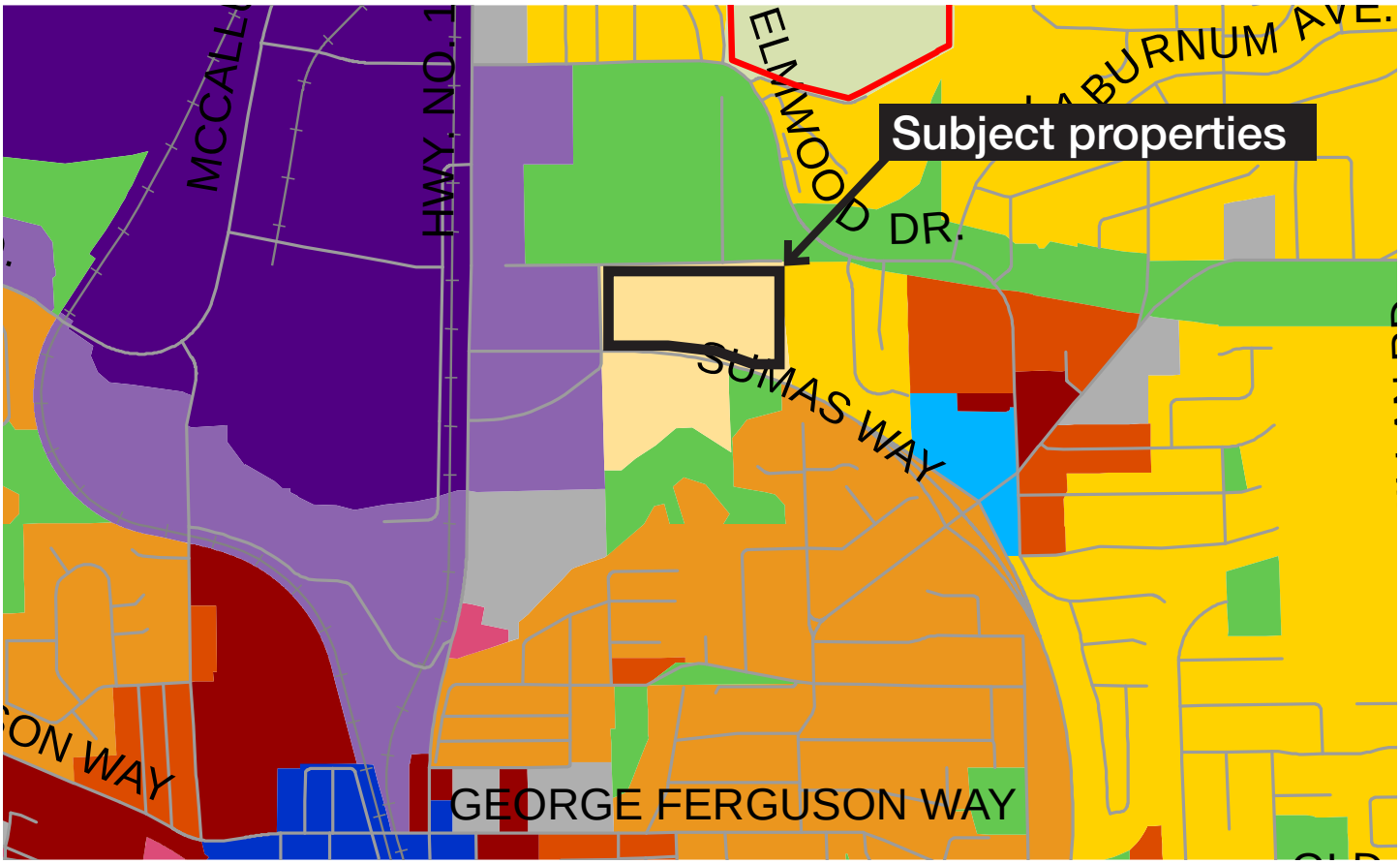


Land Use Designation: Urban Residential

Density: 16 units per hectare, 30 uph along major roads (black lines)

Figure 6.

2016 Official Community Plan



Land Use Designation: Suburban

Density: 2.5 units per hectare

Figure 7.

Site photos from March 9, 2018

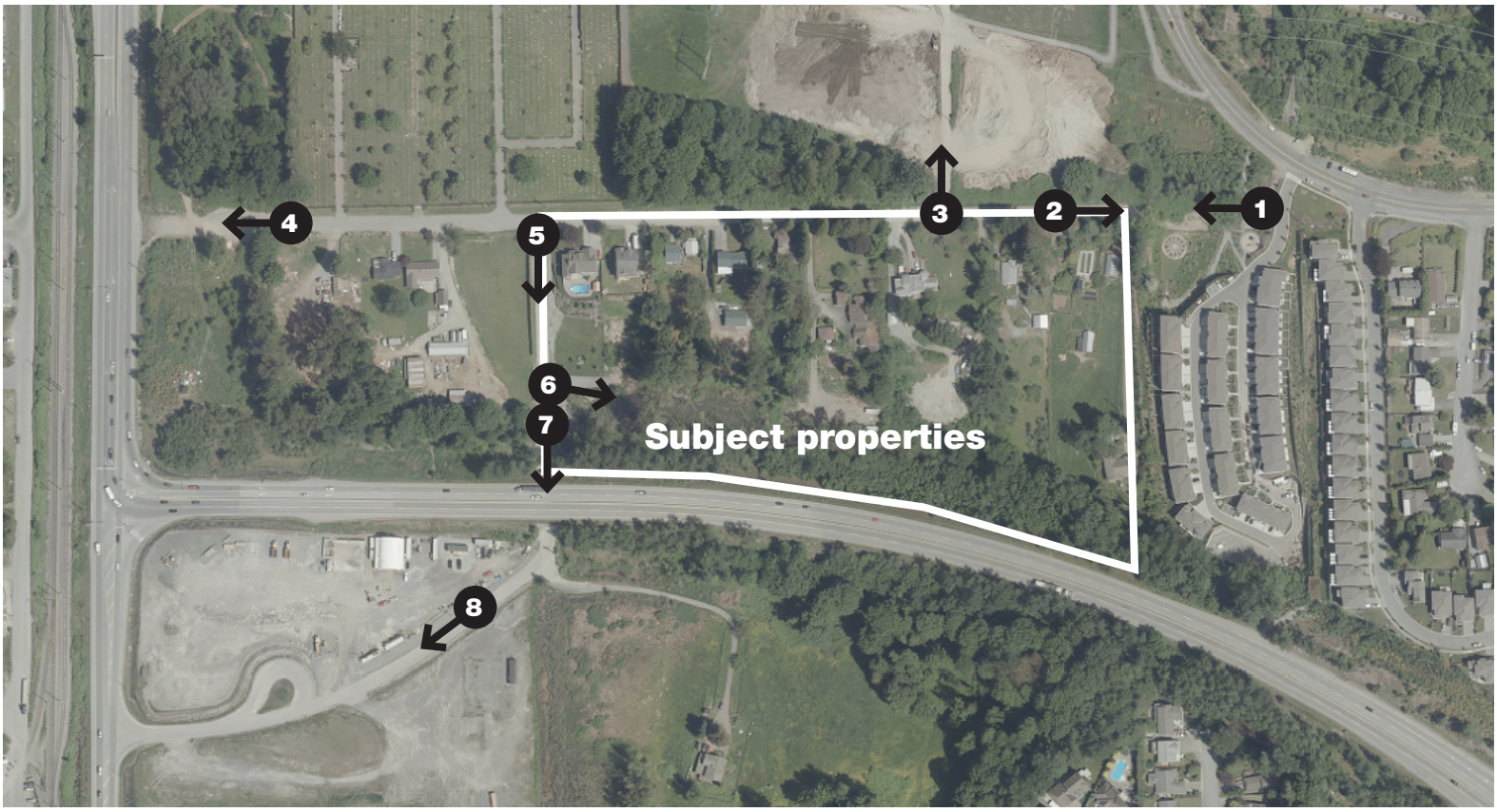


Photo 1: View west downhill from Maclure / Elmwood townhouses, approximately 20m above the location of Photo 2.

Photo 2: View east uphill from the end of Maclure Road, approximately 20m below the location of Photo 1.

Photo 3: View north along Park Lane into the Hazelwood Cemetery expansion.

Photo 4: View west to Highway 11, where there is a gate restricting Highway access.

Photo 5: View south down Pratt Street to the Highway 11 underpass, the only current access to the subject properties.

Photo 6: View east to the wetland area at the rear (south) of the subject properties.

Photo 7: Detailed view of the Highway 11 underpass.

Photo 8: View southwest along Pratt Street. The proposed new BC Transit maintenance yard will be located on the left side of the road.

COUNCIL REPORT

Executive Committee

Report No. ENG 052-2018

Date: September 19, 2018
File No: 2240-00

To: Mayor and Council
From: Tyler Bowie, Acting Director, Infrastructure Planning
Subject: Maclure / Hazelwood Area Transportation Network

RECOMMENDATION

THAT Council endorse the following steps for the Maclure Road / Hazelwood area:

1. Staff work towards a road closure bylaw for the permanent closure of Park Lane;
2. Staff develop and register a road dedication plan for the new Maclure Road Extension; and
3. That any future Official Community Plan amendment(s) for the Maclure Road properties only be considered in conjunction with a rezoning application for the subject area.

REPORT CONCURRENCE	
General Manager	**City Manager**
The Acting General Manager concurs with the recommendation of this report.	The City Manager concurs with the recommendation of this report.

SUMMARY OF THE ISSUE

At the April 9, 2018, Regular Council Meeting, Council directed staff to review the transportation network and potential impacts on future land use in the Maclure Road and Pratt Street area. This report provides recommendations on a future transportation network for the Maclure / Hazelwood area which is supported by the Transportation Master Plan and the Cemetery Master Plan.

BACKGROUND

At the April 9, 2018, Regular Council Meeting, Council directed staff to review the transportation network and potential impacts on future land use in the Maclure Road and Pratt Street area and bring back a report for Council consideration.

Currently the section of Maclure Road between Highway 11 and Elmwood Drive is serviced from Pratt Street through a tunnel underneath the Highway 11 bypass and connects to Gladys

Avenue. There is an existing emergency access gate onto Highway 11 at the west end of Maclure Road. The east end of Maclure Road connects with Park Lane which has been closed to public access since approximately 2006. Park Lane is a non-through road that was originally used to access the historic farmstead. Also, the east end of Maclure Road there are topographic constraints along the existing road right of way that prevent Maclure Road to connect to Elmwood Drive Attachment “A” shows the section of Maclure Road that is in question and the existing transportation network for the area.

DISCUSSION

During the development of the Transportation Master Plan, this area was reviewed and proposed improvements to the local transportation network were identified. Attachment “B” shows the future proposed road network for the Maclure Road / Pratt Street area. The improvements highlighted on the map are identified in the Transportation Master Plan including;

- Maclure Road Extension (Park Lane to Elmwood Drive), which will include closing the emergency access of Maclure Road at Highway 11;

- Hazelwood Avenue Extension to McCallum Road, which will include closing the Hazelwood Avenue connection to Highway 11; and

- Maclure Road Connector/ Overpass (Highway 11 to McCallum Road) which would include an Overpass over Highway 11 and interchange.

Maclure Road Extension

The Maclure Road Extension (Park Lane to Elmwood Drive) will have the largest impact to the existing neighborhood on Maclure Road as it will enhance the connectivity to the surrounding neighborhoods and provide a typical street connection, alleviating the need for primary access through Pratt Street. Pratt Street would still be used as the primary access for the new transit maintenance facility and secondary access once the Maclure Road Extension is completed. Attachment “C” shows the conceptual design of the proposed Maclure Road extension. The Maclure Road extension will also improve the long term accessibility to the Hazelwood Cemetery.

The Hazelwood Cemetery is currently bisected by Park Lane, a municipal road dedication that runs in a north-south direction which is currently closed to public access. The City began expanding the cemetery into the property east of Park Lane in 2012 with the development and construction of the columbarium. Also, the City has begun to developing the cemetery on both sides of the lane to develop future burial plots. However, with Park Lane bisecting the property the development of the cemetery is inefficient. By providing this new future Maclure Road extension, Park Lane can be permanently closed, resulting in more opportunity for space for burial plots. Discovery Trail, which currently runs through the cemetery, will also be realigned to follow the new road way to provide better connectivity. Parks, Recreation & Culture supports the closure of Park Lane and the future Maclure Road Extension.

Hazelwood Avenue Extension to McCallum Road

As part of the Transportation Master Plan a connection with McCallum Road and Hazelwood Avenue was identified. This connection will improve safety by removing the Hazelwood Avenue intersection with Highway 11 and provide a better east-west connection to Hazelwood Avenue.

Attachment “D” shows a conceptual layout of the connection between McCallum Road and Hazelwood Avenue.

Maclure Road Connector/ Overpass

Maclure Road is the City’s primary east-west arterial street in the north urban area, providing a connection from Highway 1 / Fraser Highway to Highway 11 via McCallum Road; however, there is a gap between McCallum Road and Highway 11. The Maclure Road Connector/ Overpass will provide a more direct east-west connection to and from the City’s core area. The improvements would include a new four lane urban arterial road connecting Maclure Road to Highway 11 Bypass with an overpass and interchange over Highway 11.

Staff has had discussions with MOTI, Planning and Development Services, the Abbotsford Fire Department, and Parks, Recreation and Culture, and they are all supportive of the transportation network changes noted above.

Official Community Plan

The land use designation of the Maclure Road properties (34010, 34024, 34040, 34056, 34074, 34098, 34118, 34144 and 34164) is Suburban Residential (2.5uph) in the 2016 Official Community Plan, which generally reflects existing conditions of the area (approximately 1-2 acre lots). Existing zoning is Country Residential Zone (CR) with a minimum lot size of 2.0 hectares (5 acres). As noted in a previous staff report (PDS034-2018) this land use designation is appropriate based on the urban structure and access constraints to the site.

The overall growth structure outlined in the OCP is defined by a hierarchy of mixed use centres (City Centre, 4 Urban Centres and 14 Neighbourhood Centres) envisioned to provide a mix of multifamily and commercial uses that function as neighbourhood gathering places, and destinations including shops, restaurants, cafes and services. With the transportation network changes described in this report to enable better connections and more efficient vehicle movement, a land use designation change (townhouses) to these properties may be appropriate when combined with its proximity to a Neighbourhood Centre (Immel). Staff recommends that an OCP amendment to change the land use designation should be considered in conjunction with a rezoning application reflecting the detailed development proposal for the subject area.

FINANCIAL PLAN IMPLICATION

There are no immediate financial implications on the Capital program. Staff can develop a road dedication plan for the Maclure Road Extension and road closure bylaw for Park Lane within the existing operating budget. Funding of the Hazelwood Extension and Maclure Extension road improvements should be developer driven funded. The Maclure Road Connector/ Overpass will potentially be funded through DCC’s, Grants, and Partnerships with senior levels of government or capital reserves. This will be reviewed as part of the long term financial plan.

Rajat Sharma

Rajat Sharma
General Manager, Finance and Corporate Services
Signed 9/12/2018 4:51 PM

IMPACTS ON COUNCIL POLICIES, STRATEGIC PLAN AND/OR COUNCIL DIRECTION

The proposed recommendations are supported by the Transportation Master Plan and the Cemetery Master Plan and the enhancements to the Transportation network in the area align with the Complete Community cornerstone by enhancing neighborhood connectivity.

SUBSTANTIATION OF RECOMMENDATION

At the April 9, 2018, Regular Council meeting, Council directed staff to review concerns raised regarding the transportation network in the area of Maclure Road and Pratt Street. Staff analyzed the area and as outlined in this report the Transportation Master Plan has identified several transportation network improvements. The plan includes the permanent closure of Park Lane that will support the cemetery Master Plan to better utilize the Hazelwood Cemetery and increase burial plots. Staff recommends that a road closure bylaw for Park Lane and a road dedication plan for the new Maclure Road Extension be developed and that any future OCP amendment for the Maclure Road properties be consider in conjunction with a rezoning application.

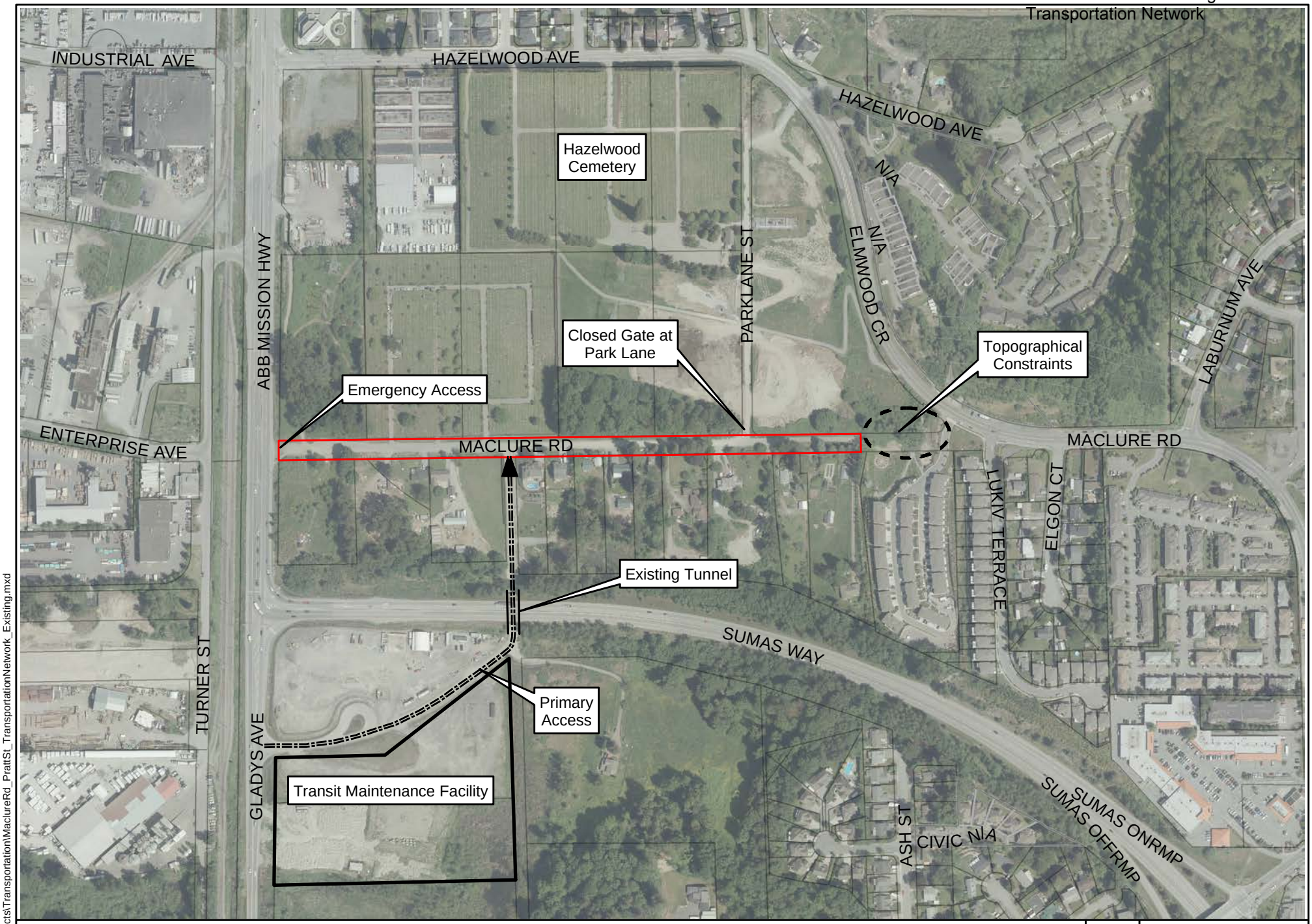
Tyler Bowie

Tyler Bowie
Acting Director, Infrastructure Planning
Signed 9/10/2018 8:58 AM

ATTACHMENTS:

Attachment "A" - Existing Transportation Network
Attachment "B" - Future Transportation Network
Attachment "C" - Maclure Road Extension to Elmwood Concept Plan
Attachment "D" - Highway 11 at McCallum Road (Hazelwood Connection Concept)

Attachment "A" - Existing Transportation Network



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ABBOTSFORD

Existing Maclure Road / Pratt Street
Transportation Network

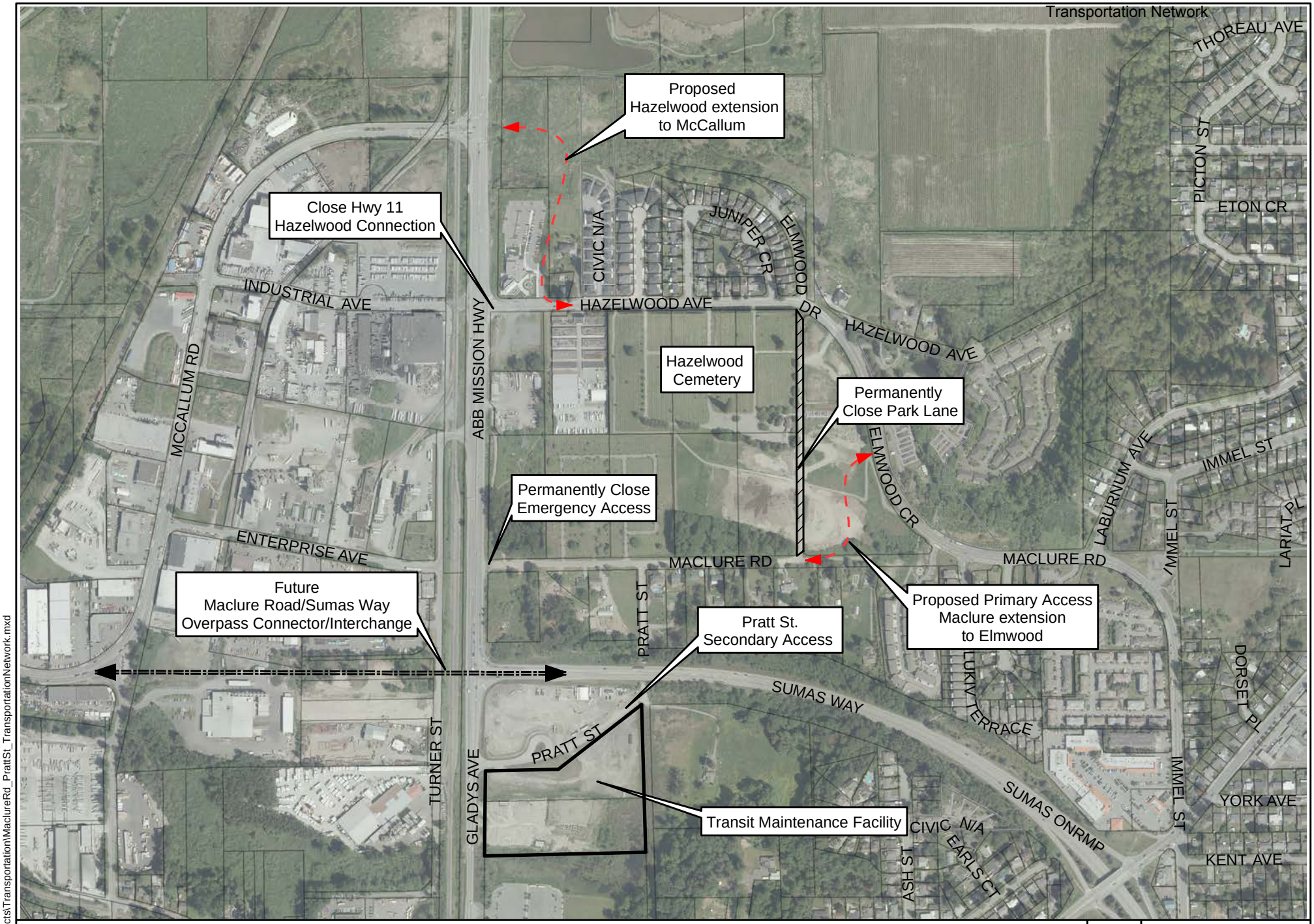
N

Attachment A

Scale 1:5,000

Plot Date 8/22/2018

Attachment "B" - Future Transportation Network



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ABBOTSFORD

Proposed Maclure Road / Pratt Street
Transportation Network

N

Attachment B

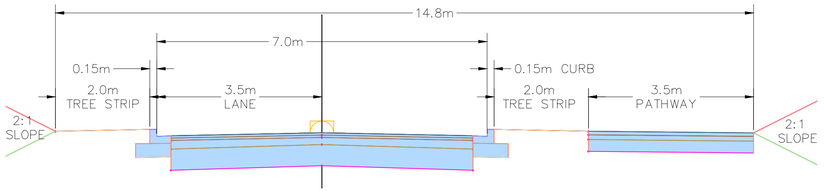
Scale 1:7,500

Plot Date 8/22/2018

Attachment "C" - Maclure Road Extension to Elmwood Concept Plan

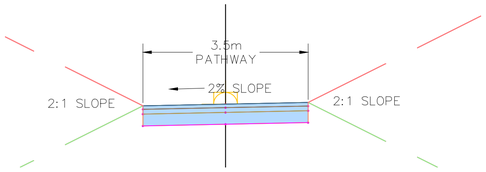
ROAD SECTION & PATHWAY DETAILS

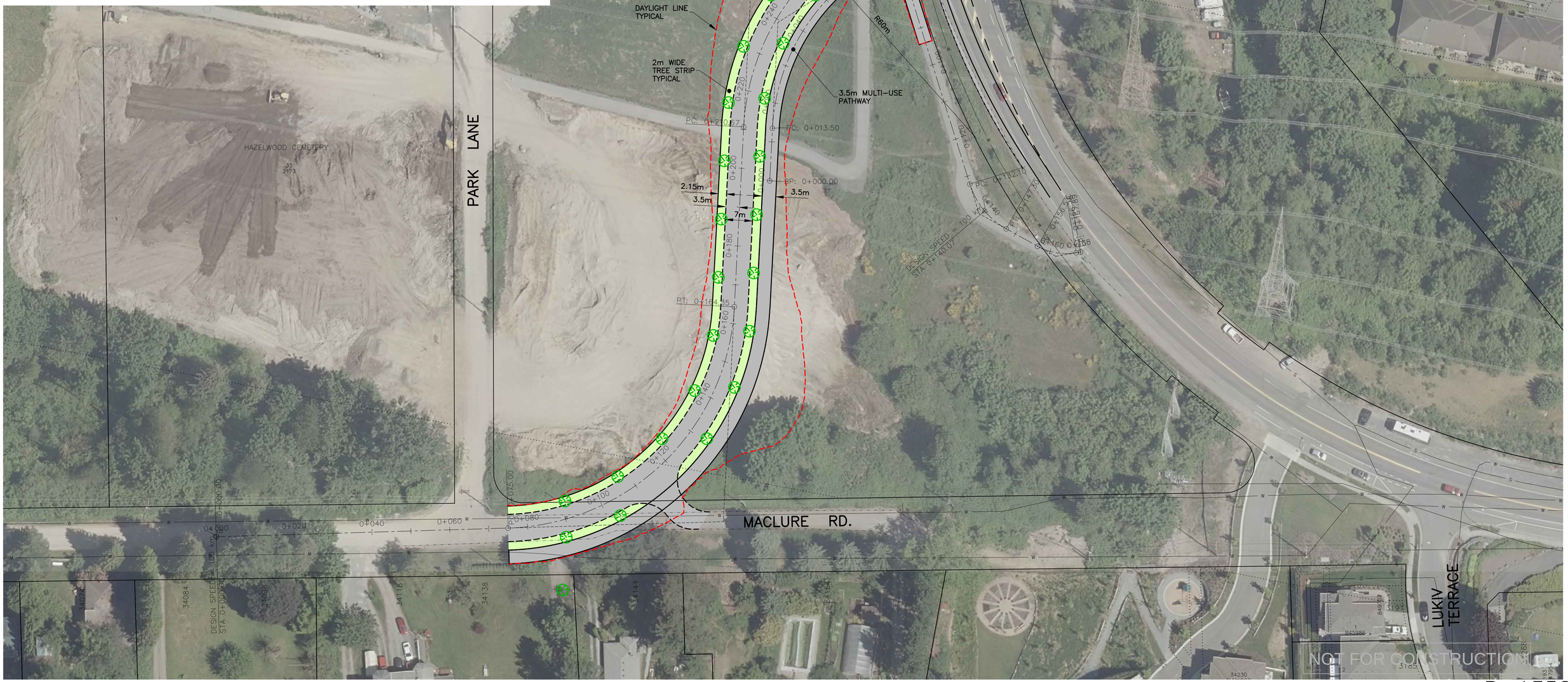
ASPHALT	100mm	177m³	CUT	458m³
BASE	150mm	280m³	FILL	5295m³
SUBBASE	450mm	840m³		
CURB (C4)		38m³		



PATHWAY SECTION DETAILS

ASPHALT	75mm	16.5m³	CUT	19m³
BASE	100mm	22m³	FILL	490m³
SUBBASE	250mm	55m³		





GRID NO. C10 SHEET NO. 1 OF 3 DRWG. NO. R-1358

LOCATION FOR GAS, ELECTRICAL, TEL, & CABLE UTILITIES TO BE VERIFIED

NO.	DATE	BY	REVISIONS	TECH	ENG.

DATE:	2018 03 27
DRAWN:	MR
DESIGN:	JL
SAP WORK ORDER #	

SURVEY JOB NO.:	2013 LIDAR
SURVEY CREW:	
SCALE	
HOR.	1 : 500
VERT.	

ABBOTSFORD

MACLURE RD. EXTENSION TO ELMWOOD DR. (THROUGH HAZELWOOD CEMETERY) PRELIMINARY ROAD DESIGN

T:\CIVIL 3D PROJ\R1358\R1358.dwg

Attachment "D" - Highway 11 at McCallum Road
(Hazelwood Connection Concept)

NOT FOR CONSTRUCTION

GRID NO. E9 SHEET NO. 1 OF 1 DRWG. NO.

LOCATION FOR GAS, ELECTRICAL, TEL, & CABLE UTILITIES ARE APPROXIMATE. CONTACT "BC ONE CALL" TO CONFIRM LOCATIONS PRIOR TO DESIGN OR CONSTRUCTION.

BC ONE CALL: TICKET # _____ DATE: _____

NO.	DATE	BY	REVISIONS	TECH	ENG.

DATE:	2014 10 17
DRAWN:	SD
DESIGN:	JS
SAP WORK ORDER #	

SURVEY JOB NO.:	
SURVEY CREW:	
SCALE	
HOR.	1 : 500
VERT.	1 : 50

ABBOTSFORD

MCCALLUM RD. AT HIGHWAY 11
FUTURE ROAD ALIGNMENT

FILE LOCATION:

OCP Amendment Questions

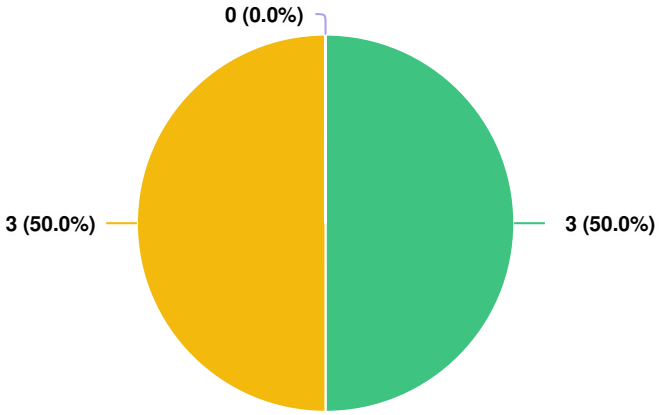
SURVEY RESPONSE REPORT

08 November 2023 - 29 November 2023

PROJECT NAME:
OCP Amendment Application for 34010, 34024, 34040, 34056 and 34074 Maclure Road (PRJ22-107)

SURVEY QUESTIONS

Q1 Do you support the proposed OCP Amendment from Suburban to Urban 2 – Ground Oriented?



Question options

Yes No Undecided

Mandatory Question (6 response(s))
Question type: Radio Button Question

Q2 Do you have any further comments you would like to provide?

Anonymous
11/10/2023 05:08 PM

The road connection is just past a blind corner traveling east, Is there going to be a stop light, is the tunnel route being blocked? Seems that the road should be developed to the west and connect to the Abby mission highway with a stop light and a left turn onto the highway, Since the Abby mission highway was expanded vehicles can no longer turn left from Hazelwood onto the highway 11,forcing vehicles to make extended journeys to get to Old Town,or forced to drive up hill in into a conjested area of a school zone and small shopping center. It would be beneficial to existing residents in this area to develop the road system to allow easier access to HWY 11 south bound which was taken away when the highway was 4 laned ,this would seem to be a chance to get the road system more livable for the area residents and the many future residents that the various high density projects that are already slated for this area.

Anonymous
11/16/2023 09:19 AM

A couple of things need to be done for this to be feasible. Maclure Road needs to be connected to Highway 11 to help alleviate the significant increase in traffic which will otherwise hit the intersection of Maclure/Elmwood. There should be a highway crossing at Maclure which connects to Enterprise Ave. Right now there is a major problem with people crossing HIghway 11, where they turn right off of Hazelwood and then immediately cross the lanes to turn left on McCallum. I've witnessed 3 accidents there and so many close calls, it's dangerous and will only become more dangerous as traffic increases. It's crazy that Hazelwood changes to Elmwood, then changes to Maclure, then changes to Immel all in the span of a couple of blocks just because the road curves. It's one road and should have one name, explaining to someone to turn to our house at the intersection of Lukiv Terrace and Maclure just confuses them, and now having the lower section of Maclure becoming a higher use area is just going to confuse things more. The naming of that road should be considered for a change. If these issues were addressed I would change my vote to support this amendment and development.

Anonymous
11/16/2023 12:15 PM

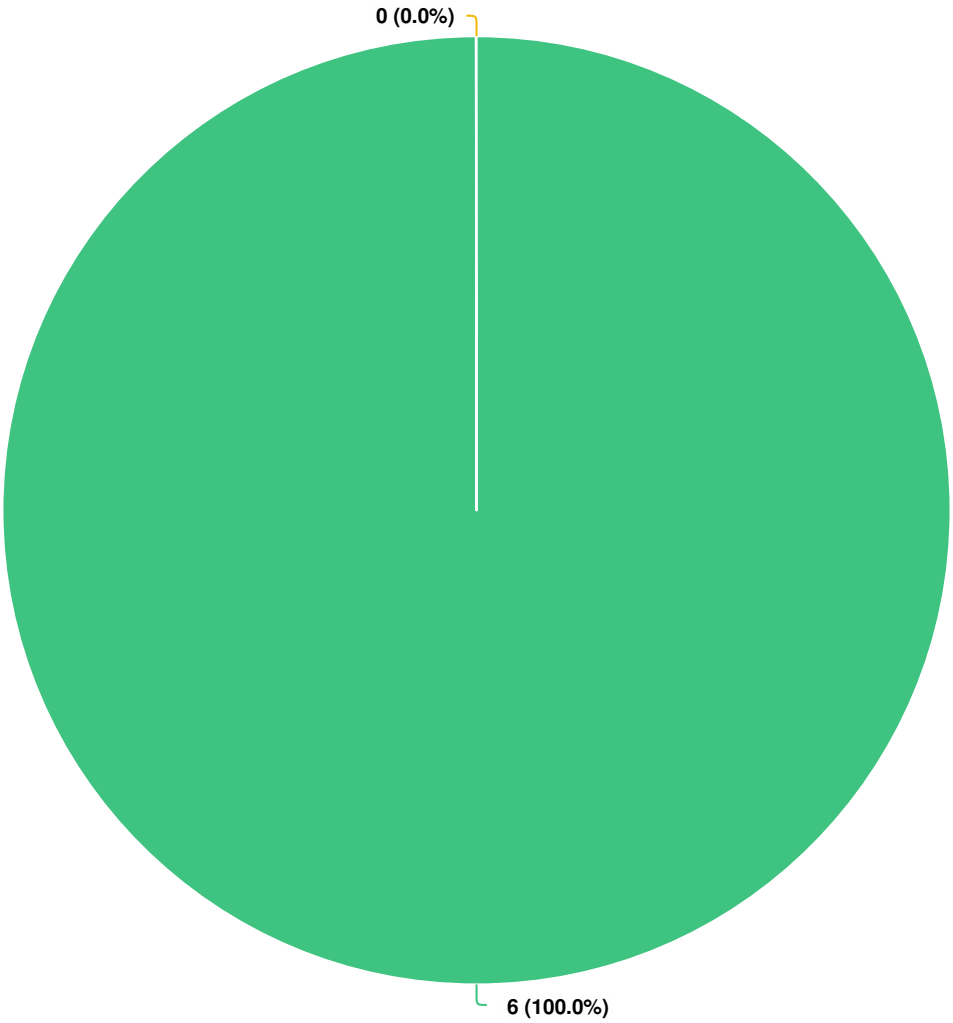
I own and live in the townhouse development just east of this proposed development. With Maclure Road being extended to Elmwood Drive and Pratt Street closed off I am concerned about the additional traffic load up to the intersection of Immel and Old Clayburn Road and Old Clayburn Road and Sumas Way (Hwy 11). Those intersections are already heavily congested and backed up in the morning and afternoon/evening rush hour. What is being proposed to update those intersections and infrastructure to accommodate the

	increased traffic load?
Anonymous 11/16/2023 04:21 PM	Already an extreme strain on our city's services. Schools are maxed out; hospital wait times are unbearable; traffic in the area is a bottle neck. What is the infrastructure plan? You currently have no access to the highway to relieve pressure. Have you seen the traffic during the school day at Clayburn and immel? This is another density shot in the dark for a municipality that cannot support the housing growth already. Looking forward to the debate and answers to these questions.
Anonymous 11/16/2023 06:35 PM	I support this rezoning for the purpose of addressing housing needs in Abbotsford. Increased density in central locations makes sense as access to transit, schools, and amenities already exists. My concern is the traffic plan with the "Multi-Family Local Road-Way standard, connecting the subject site to Elmwood Drive." Current traffic levels on Elmwood Drive combined with the proposed closure of Pratt Street access will increase existing risks to vehicle, bicycle, and pedestrian traffic. The Hazelwood-Elmwood-MacLure-Immel stretch of road, besides confusion over multiple names (please change to one name!), has seen increased traffic (vehicle, bicycle, and pedestrian) and congestion in the 10 years I have lived in the area. In mornings, vehicle traffic heading up the hill towards the Immel/Clayburn intersection see school, work, and general traffic converge, resulting in long line-ups and significant pedestrian risk (talk to crossing guards at Immel/Clayburn!). The connection of Hazelwood and Highway #11 has also become a primary route for many people in the area, with most vehicles dashing dangerously across traffic to make it into the left turn lane towards McCallum. Lastly, coming down the hill of Elmwood Drive towards Elgon Court, Lukiv Terrace, and Ten Oaks Townhouses has seen several rear-end collisions, close calls with pedestrians, and has bad visibility the further down the hill you go (visibility is especially low by proposed new access). I am worried that the proposed access will exacerbate these problems unless further action is taken in these surrounding streets. For example, the addition of street lights all the way down Elmwood Drive and a center turning lane would increase the safety of the street. Also, leaving the Pratt Street access open could alleviate the strain of traffic on Elmwood Drive from this new development. Alternatively, connecting Maclure Road to Highway #11 with a right turn access could reduce the amount of traffic making the difficult merge situation at Hazelwood and Highway #11 on their way to McCallum.
Anonymous 11/26/2023 08:36 PM	As a resident of the Ten Oaks community overlooking this proposed development, I have serious concerns over the proposed Maclure

road extensions ability to adequately handle the increased population of the area. Traffic will be a mess during construction and also once the new residents move in. The increased foot traffic on the trail would eliminate the peace and tranquility it currently offers. Finally, from a personal standpoint, the impact to view and green space, would likely be detrimental to the value of my property. I strongly oppose this proposal.

Optional question (6 response(s), 0 skipped)
Question type: Essay Question

Q3 Are you a resident or landowner in Abbotsford?



Question options

Yes No

Mandatory Question (6 response(s))
Question type: Radio Button Question

PUBLIC INFORMATION MEETING: COMMENT SHEET (PRJ22-037)

Date: Wednesday, November 15, 2023 between 6:00 PM and 8:00 PM
Location: Dr. Thomas A. Swift Elementary School, 34800 Mierau Street
Properties: 34098, 34118, 34144 & 34164 Maclure Road

Thank you for attending this public information meeting. We would appreciate your comments on the proposed application. Please place your completed comment sheet in the comment box or return it to the City of Abbotsford by November 29, 2023 to the attention of:

Tahir Ahmed
Planning & Development Services
32315 South Fraser Way, Abbotsford, BC V2T 1W7

The applicant's proposal and related information can also be viewed by visiting the Let's Talk Abbotsford online engagement portal, during the online consultation period. There is an opportunity to provide comments at the end of the survey on the online engagement portal.

Engagement Portal: www.letstalkabbotsford.ca/OCPamendments
Consultation Period: November 8, 2023 (8:30 am) to November 29, 2023 (4:30 pm)

1. **Do you support the proposed OCP Amendment from Suburban to Urban 2 - Ground Oriented?**

   ☐ Yes ☐ No

2. **Do you have any further comments you would like to provide?**

Comments:

AS A RESIDENT OF TEN OAKES DIRECTLY ABOVE THIS DEVELOPMENT I HOPE IF THIS DEVELOPMENT GOES AHEAD THERE WILL BE LOTS OF TALL TREES GOING IN BETWEEN 10 OAKES & THE NEW DEVELOPMENT AS WE WILL BE LOOKING DOWN INTO THIS NEW DEVELOPMENT.

OVER →

(Utilize the back of this form for any additional comments)

3. **Are you a resident or land owner in Abbotsford?**

   ☑ Yes ☐ No

Name: M[redacted] ODDY **Email:** [redacted]

Address: [redacted] **Phone:** [redacted]

Names and contact information of attendees given at public meetings are considered to be in the public domain. Public comment sheets may be appended to Council documents, reports, etc. If you have any questions about the collection and use of your personal information, please contact:
City of Abbotsford 32315 South Fraser Way, Abbotsford, BC V2T 1W7
Information & Privacy Coordinator at 604-864-5575

PUBLIC INFORMATION MEETING: COMMENT SHEET
(PRJ22-037)

Comments:

WITH THE NEW ROAD ATTACHING TO ELMWOOD THERE SHOULD BE A SEPARATE LEFT TURN LANE TO TURN INTO, THERE SHOULD ALSO BE A LEFT TURN LANE INTO 10 OAKES CURRENTLY THERE IS A DOUBLE YELLOW LINE TO TURN INTO 10 OAKES DURING RUSH HOUR THERE IS A LOT OF TRAFFIC COMING UP ELMWOOD AND ITS HARD TO TURN LEFT WITH ALL THE ONCOMING TRAFFIC IVE BEEN BACKED UP THERE BEFORE THAT SAME PROBLEM WILL EXIST TRYING TO TURN INTO THE NEW ROAD

Feedback Form (PRJ22-037)

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Consultation Period: November 8, 2023 (8:30 am) to November 29, 2023 (4:30 pm)

1. **Do you support the proposed OCP Amendment from Suburban to Urban 2 - Ground Oriented?**

   ☒ Yes ☐ No

2. **Do you have any further comments you would like to provide?**

Comments:

This development will be a wonderful addition to Abbotsford - Infinity is intentional about matching their project "feel" to the context that they're in, and this will be no exception!

(Utilize the back of this form for any additional comments)

3. **Are you a resident or land owner in Abbotsford?**

   ☒ Yes ☐ No

Name: E 22 (1) Throness **Email:** 22 (1)

Address: 22 (1) **Phone:**

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Comments:

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GeoWest Engineering Ltd.
200 · 34425 McConnell Road, Abbotsford, BC V2S 7P1
www.geowestengineering.com
info@geowestengineering.com | 604·852·9088

June 6, 2022

GeoWest File: GA21-1287-00

Raicon Developments Inc.
#202 – 17610 – 65A Avenue
Surrey, BC V3S 5N4

Attention: Ranjit Rai, President and CEO
Via e-mail: ranjit@raicon.ca

Project: **Proposed Multi-Family Development – 34010 to 34074 Maclure Road, Abbotsford, BC**

Subject: **Geotechnical Assessment Report – Revision 1**

1. INTRODUCTION

At the request of Atelier Pacific Architecture Inc. (APA) on behalf of Raicon Developments Inc. (the Client), GeoWest Engineering Ltd. (GeoWest) provides herein a revised geotechnical assessment report for the design and construction of the proposed multi-family development at the above referenced addresses and shown in Figure 1.

This geotechnical assessment report has been completed in accordance with our proposal P21-1445-00 dated September 24, 2021, with the geotechnical portion of the proposal approved by the Client on September 30, 2021 and is based on a new architectural site plan prepared by APA dated April 13, 2022 that has been provided to us. This revised geotechnical assessment report supersedes our previous report dated November 9, 2021.

The purpose of the geotechnical assessment was to establish and assess the subsurface soil and groundwater conditions at the site and to provide related geotechnical discussion and recommendations for the design and construction of the proposed development. As well, a geotechnical landslide assessment has been completed based on the preliminary development information that has been provided to us.

2. PROPOSED CONSTRUCTION

The APA architectural site plan is attached in Appendix A of this report and shows the development consisting of 15 residential townhome buildings with a total of 69 units and on-site roadways. The buildings will be three-storeys with slab-on-grade floors. We expect that wood framed construction will be employed above grade. For buildings that include partially buried basements, we expect that the lowest level would comprise reinforced concrete construction.

Structural loading is anticipated to be relatively light, with column, wall, and floor loading of less than 400 kN, 30 kN/m, and 5 kPa, respectively. These values have been employed in our analysis and form the basis for the recommendations herein.

Site grades are shown being increased by up to approximately 4 m and decreased by up to 3 m in the vicinity of the proposed townhouse buildings. Significant regrading of the site to the south of the townhouse buildings will be required to accommodate the proposed retaining wall, which will have a maximum proposed exposed height of 5.8 m. Once the civil site grading plan and building design drawings are refined/finalized, they should be provided to GeoWest for review. Revisions to the recommendations contained herein may be required based on our review of the refined design drawings.

3. SITE DESCRIPTION

The development site consists of an assemblage of 5 residential acreage lots (34010, 34024, 34040, 34056, and 34074 Maclure Road) located east of the major intersection of Sumas Way and Abbotsford-Mission Highway (Highway 11), as shown in the attached Figure 1. A topographic survey of the site completed by Elevate Land Surveying (their File #21-1235-SITE) dated April 29, 2021, that is attached in Appendix B, shows the site having a total area of 17,824.9 m^2. Topographic elevations on Maclure Road fronting the site vary from about 18.4 to 24.3 m, increasing towards the east. Elevations on Pratt Street to the west of the site decrease from about 18.4 m at the intersection of Maclure Road to about 10.8 m at the south property line of the development. Elevations on site decrease from the north property line towards the south, with the lowest elevations surveyed at the edge of the "wetland" noted on the topographic survey of about 9.4 to 9.8 m. Slopes within the northern portion of the site where development is contemplated are relatively flat at about 10H:1V (Horizontal:Vertical) or less. Slopes at the central and south end of individual properties locally vary from 3.5 to 5.4 m in height and are as steep as 1.4H:1V. These steeper slopes have been formed by extensive filling of these properties.

Each of the existing properties are presently occupied by residential homes. A separate shed is located to the south of the residential home at 34056 Maclure Road and there is a pool located south of the home at 34010 Maclure Road. Landscape retaining walls up to about 1.2 m in height are also located on the same two properties to the south of the homes. All properties include typical residential landscaping and grassed yards. Some trees are located on the individual lots surrounding the homes, with a larger concentration of trees along the topographically low southern end of the site adjacent to the surveyed wetland area. Each of the existing properties has driveway access to Maclure Road. There is also access to 34024 Maclure Road from a gravel surfaced driveway to Pratt Street.

The presence of Sumas Way to the south of the development property has resulted in the formation of a topographically low area at the south end of the development that grades down towards the west. We were advised during our 2018 assessment of the site that localized flooding and ponding of water is common at the southwest corner of the development property during wetter periods of the year. This is the wetland area noted on the topographic survey.

The site is bordered to the west by Pratt Street, by Sumas Way to the south, by Maclure Road to the north, and by residential acreages to the east.

4. FIELD WORK

The site was originally investigated by GeoWest as part of a preliminary geotechnical assessment on November 27 and 30, 2018 for a different client with an alternate development concept (GeoWest File No. GA18-1325-00). The site investigation at that time comprised a total of eight solid stem auger test holes. The

proposed development at that time included the properties extending east of the currently proposed development site to 34164 Maclure Road.

GeoWest completed a supplementary geotechnical investigation of the site on October 18, 2021 as part of the project specific geotechnical assessment for this contemplated development. The supplementary site investigation was comprised of seven solid stem auger test holes (AH21-01 to AH21-07). The approximate locations of the auger holes from both our 2018 and 2021 site investigations are shown on Figure 2. Soil logs from the 2018 and 2021 GeoWest investigations are attached to this report.

The auger holes in 2018 and 2021 were conducted using a subcontracted track-mounted auger drill rig supplied and operated by Downrite Drilling Ltd. of Chilliwack, BC. The field work was supervised by a member of our engineering staff, with the auger holes backfilled immediately upon completion of testing, sampling, and logging the conditions in accordance with provincial groundwater protection regulations. The auger holes were drilled to depths of between 6.1 and 9.1 m below current local grades. Disturbed soil samples were collected from the auger flights and were submitted for routine laboratory moisture content analysis. The moisture content data is included on the soil logs.

Dynamic Cone Penetration Tests (DCPTs) were conducted at auger hole locations AH18-01, AH18-02, AH18-03, AH21-01, AH21-02, AH21-03, AH21-04, AH21-06, and AH21-07. The DCPT is widely used by local geotechnical practitioners and is conducted by advancing a steel cone with the same diameter as a standard split barrel sampler into the ground using an automatic trip hammer with a weight of 63 kg and a free-fall drop of 750 mm (the same driving energy used for the Standard Penetration Test [SPT]). The number of blows required for each 305 mm interval of depth of advancement of the cone is recorded. The blow counts for the DCPT provide a continuous indication of the *in-situ* relative density/consistency of the soils. However, this test method is not an ASTM recognized procedure, nor is it universally accepted as a reliable alternative to SPT testing. The DCPT data is included on the relevant soil logs.

5. SITE CONDITIONS

5.1 Surficial Geology

According to Geological Survey of Canada (GSC) Surficial Geology Map 1485A, the site is underlain by Sumas Drift sediments (Sa) of "recessional channel and floodplain deposits laid down by proglacial streams; gravel and sand up to 40 m thick, normal range of thickness 5-25 m".

The drilling indicates the presence of the referenced Sumas Drift sediments as well as other glacially derived soils inferred to be glaciomarine in origin.

5.2 Soil Conditions

The soil logs should be referred to for the specific soil conditions at each auger hole location. The soil logs attached to this report provide description of the soil conditions encountered at discrete locations. Actual soil conditions remote from the auger holes may vary across the site. Contractors should make their own interpretation of the soil logs and the site conditions for the purposes of bidding and performing work at the site. A summary of the conditions at the auger holes is provided below.

5.2.1 Fill & Topsoil

Topsoil was observed at the ground surface at auger hole locations AH18-01, AH21-01, AH21-02, AH21-05, and AH21-06 and was grassed covered and varied in thickness between 200 and 600 mm. Topsoil thicknesses will vary across the site and are likely to be thicker, for example, in the vicinity of existing stands of trees.

Auger hole AH18-03 encountered approximately 25 mm of loose crushed asphalt at the ground surface. This is the only test hole location where asphalt was observed.

Fill was encountered at all auger hole locations on-site except AH21-03. The nature and thickness of the fill on-site is highly variable, with extensive filling inferred to have been conducted on each of the individual lots based on the test hole information and our interpretation of the topographic survey. The fill was observed to vary primarily from silt to sand with varying gravel content to sand and gravel with varying silt content. The fill was also observed to contain organics which included topsoil, wood debris, and roots. Metal debris, asphalt debris, and other construction debris was also observed within the fill on the lots to the east of the development site and may also be present within some of the fills on this site. The relative density of the fills, based on the DCPT's, varied from very loose or very soft to compact or stiff, with *in-situ* moisture contents generally well in excess of the fill's optimum moisture content for compaction where the fills have an elevated fines content. The thickness of the fill at our auger hole locations varied from 0.2 to 4 m. Our site investigation data indicates that the fills present on-site were not placed in a controlled manner or with the intent of providing support for structures of the type contemplated for the proposed development.

Based on the presence of on-site roads, residential homes, a pool, and an accessory building it is expected that additional fills are present on-site extending beyond our test hole locations. Additional fills should be expected on-site, for example, below and in the vicinity of any existing structures, driveways, on-site roads, within utility trenches, and fill slope locations.

5.2.2 Sumas Drift

Sumas Drift deposits of compact to very dense sand to sand and gravel to gravel with some sand, all with varying silt content, were observed at all auger hole locations and extended to the full depth of exploration at all of the auger hole locations, except AH21-04. The deposits are interbedded with 0.15 to 1.5 m thick layers of silt with varying sand content at varying depths at auger holes AH18-02, AH18-03, AH21-02, AH21-03, and AH21-04.

Soils inferred to be glaciomarine in origin were observed immediately below the fill at AH18-01, AH18-02, AH18-03, and AH21-05. The glaciomarine deposits are also inferred to underlie the Sumas Drift deposits at AH21-04 and extend to the full depth of exploration at that auger hole. The glaciomarine sediments range in thickness between about 0.4 and 2.1 m, except at AH21-04 where the bottom of the deposit was not confirmed. The glaciomarine deposits are generally comprised of firm to hard silt with varying sand, gravel, and clay content.

Although not observed at our auger hole locations, the Sumas Drift deposits can contain cobbles and boulders.

The Sumas Drift and glaciomarine deposits are expected to exhibit low compressibility under potential grading fill and structural loading from the development indicated on the APA drawings.

5.3 Groundwater Conditions

The static groundwater table was estimated at the time of our 2018 site investigation to be at an elevation of approximately 8 m, geodetic, based on the observations at our auger hole locations conducted at the topographically low south and west ends of the site. Groundwater was also encountered during our 2021 site investigation at AH21-01 and AH21-07 at similar elevations. The static groundwater table should be expected to vary throughout year and will be influenced by seasonal and weather changes, with localized ponding or flooding at the toe of the existing slope that is presently indicated as wetland on the Elevate topographic survey.

Perched water was observed at AH18-03 within the variable fills at a depth of about 1.8 m. Perched water should be expected to form within any higher permeability natural deposits or fills that are underlain by glaciomarine or other similarly low permeability soils. Surficial ponding can also occur where these low permeability deposits are present at or very near the ground surface. Perched groundwater and near surface ponding should be expected during the wetter months of the year.

6. DISCUSSIONS AND RECOMMENDATIONS

6.1 General

The contemplated development is considered geotechnically feasible subject to the incorporation of all recommendations contained herein. The topsoil and fills described in Section 5.2.1 are not suitable to support the proposed buildings and should either be stripped followed by grade reinstatement with "engineered fill" as recommended and defined in Section 6.3, or if the fills are left in place the proposed buildings should be constructed with pile supported foundations. Where fills are left in place there should be an expectation of some long-term settlement of these materials due to the variable composition and lack of proper compaction. The potential for these settlements and magnitude cannot be readily predicted due to the variability of the material.

Temporary excavations for site stripping may be relatively deep. Perched groundwater water will likely be prevalent during the wetter months of the year near the surface. A combination of phased excavation and filling, perimeter swales, and sumps is likely to be necessary to facilitate the site preparation and construction.

6.2 Slope Stability and Permanent Slopes

The slope stability of the site has been modelled with the 2D limit equilibrium modelling software Slide 2018, developed by RocScience. The slope has been assessed in accordance with the EGBC Guidelines for Legislated Landslide Assessments for Proposed Residential Developments in BC (May 2010) (the Guidelines).

The location of our analysis section corresponds with Section A-A is shown on Figure 2 and was chosen based on the anticipated significant required grade change at that location to accommodate the retaining wall, as well as the presence of extensive thicknesses of poor-quality fills. For the purposes of our analysis, we have assumed that a 6.6 m tall (assumes 0.8 m of burial), geogrid reinforced retaining wall will be constructed at this location to facilitate the proposed site grading. Soil strength parameters were determined based on our general

experience and the site investigation data. The soil parameters employed in our static and seismic analyses are shown in Figures 3 and 4.

For the seismic analysis, the full design PGA for this site of 0.305g has been considered, as is recommended for the initial seismic assessment of slopes in the Guidelines.

The minimum factors of safety under static and seismic conditions are 2.2 and 1.2, respectively. The results of our analysis indicate that the static factor of safety meets the requirements of the Guidelines, which requires a minimum factor of safety of 1.5 under static conditions. The results of the seismic analysis also meet the Guideline requirements, which includes a minimum required seismic factor of safety of 1.0.

We expect that the slope stability requirements set out in the Guidelines will be achieved subject to the incorporation of the site preparation and foundation recommendations contained herein which include:

1. Stripping of the existing poor-quality fills, replacement with engineered fill, and support of the buildings on conventional strip and pad foundations; or
2. Support of the buildings on piled foundations where underlain by poor-quality fills that will not be removed; and
3. Engineered retaining wall designs, as required, to meet the proposed design grades at the south end of the site.

Permanent slopes should be graded at no steeper than 2H:1V. Flatter slopes of 4H:1V may be required for landscape purposes and ease of maintenance.

Slopes must be protected from erosion, and we recommend that all slope surfaces be permanently vegetated. The near surface stability of the slopes benefits from the presence of vegetation, with the root structures promoting binding of the surficial soil together and a reduction in pore water pressure by uptake of water by the roots. Any sloped areas which become denuded of vegetation for any reason should be replanted immediately. Plants suitable for use on slopes and with relatively deep rooting root structures are preferable from a geotechnical perspective. Plant selection should be guided by an experienced landscape designer or slope bio-remediation expert.

Any future grading alterations, retaining wall construction, renovations/additions to the contemplated structures, addition of new structures, or changes to the drainage systems on the property should be reviewed by a professional Geotechnical Engineer, with any necessary permitting obtained from the City of Abbotsford.

GeoWest can provide a sealed Landslide Assessment Assurance Statement "Appendix D" upon request and after completion of a review and approval of the finalized development and grading designs.

6.3 Subgrade Preparation for Conventional Strip and Pad Foundations

Stripping of all existing asphalt, existing foundations and slabs, other structures, vegetation, topsoil, fill, other organic material, refuse, construction debris, or any other loose or otherwise disturbed materials must be conducted to expose a subgrade of firm to hard glaciomarine silt or compact to very dense sand with varying silt content to sand and gravel. Stripping depths will vary across the site. The stripping depths at the individual test hole locations are provided in Table 1 for reference.

Table 1: Minimum Stripping Depths at the Auger Hole Locations	
Auger Hole Number	**Stripping Depth (m)**
AH18-01	1.2
AH18-02	0.5
AH18-03	3.6
AH21-01	1.7
AH21-02	3.0
AH21-03	0.5
AH21-04	0.6
AH21-05	4.0
AH21-06	3.0
AH21-07	1.0

The stripped site should be graded to inhibit the ponding of water. Water should be directed to perimeter swales and sumps, as required, which is discharged to appropriate off-site facilities.

Where grade reinstatement is required after stripping, engineered fill should be employed. For the purposes of this report engineered fill is defined as well graded sand to sand and gravel, with less than 8% fines, compacted in 300 mm thick loose lifts to 100% SPD (Standard Proctor maximum dry density), in accordance with ASTM D698.

We expect that some of the existing fills and native soils present on-site may be utilized as engineered fill. The fill present on-site may be processed to separate the mineral fills from the observed topsoil, other organics, wood, metal, and construction debris (where present), which are not suitable to be present within the engineered fill. Once processed to remove these materials, moisture conditioning will be required to bring the fills to their optimum moisture content for compaction. Some moisture conditioning of the native soils will be required as well. Our test hole information suggests that the existing fills and portions of the native soil deposits are significantly wet of their optimum moisture content and would have to be dried prior to use. Drying and re-use of properly processed fill and native soil is likely to be restricted to the warmer and dryer months of the year. A relatively significant footprint on the property is likely to be required to spread the soils in sufficiently thin lifts (~ 300 mm) to allow the soil to adequately dry. Note that any soils proposed for re-use that contain in excess of 8% fines are not suitable for any application requiring a free-draining soil. Compaction of the engineered fill should be confirmed by in-place soil density testing conducted by the Geotechnical Engineer and proof rolling under the review of the Geotechnical Engineer at the time of fill placement.

6.4 Seismic Considerations

The Sumas Drift and glaciomarine sediments are not considered liquefiable during the 2018 British Columbia Building Code (BCBC) design earthquake. Some of the existing very loose fills may be subject to strain softening if they become saturated during perched groundwater conditions, which could result in some settlement of these soils during the BCBC design earthquake. Removal of the fills or incorporation of pile foundations in conjunction with the recommended slope regrading provided in Section 6.2 will address this condition.

The seismic site class, in accordance with Table 4.1.8.4A of the 2018 BCBC, may be taken to be Site Class D. The Site Coefficient and Peak Ground Acceleration (PGA) required for the seismic design requirements of the 2018 BCBC may be taken to be 1.6 and 0.305g, respectively. The PGA has been derived based on the 2015 National

Building Code seismic hazard calculator provided by Natural Resources Canada for this specific site (Latitude 49.059682, Longitude -122.281892).

6.5 Conventional Strip and Pad Foundations

It is recommended that the shallow footings bearing on engineered fill or approved natural soils be designed using a Serviceability Limit State (SLS) soil bearing resistance of 100 kPa and a factored Ultimate Limit State (ULS) soil bearing resistance of 150 kPa.

The underside of the exterior wall footings should be located a minimum of 450 mm below the finished exterior grade for confinement and frost protection. The recommended minimum footing widths are 450 and 600 mm for continuous and spread footings, respectively.

Footings should be stepped at no steeper than 1H:1V. The underside of foundations should be located below a 1H:1V influence line taken up from the base of adjacent deeper excavations for other footings, utilities, etc. or the SLS and factored ULS soil bearing resistances provided above would need to be reviewed.

Post-construction total footing settlement is anticipated to not exceed 25 mm. Building differential settlements are expected to be less than L/500 on average.

6.6 Pile Foundations

Support of the buildings underlain by poor quality fills with piles will be required if stripping of the fills will not be conducted. It is our opinion that the most economical and practical piling options for this site include grouted screw piles or driven timber or steel pipe piles.

All piles should be designed as end-bearing piles, with the pile tips embedded in the dense Sumas Drift deposits. The fills on each of the individual lots are expected to thicken towards the south, based on the test hole and the topographic survey information. The locations of the most significant fills are evident on the topographic survey where the site contours are tightly spaced together. The piles should be expected to be correspondingly longer towards the south as well. It should be appreciated that embedment of the piles by 1.5 to 2 m into the Sumas Drift may be required to achieve suitable axial capacity.

For preliminary design purposes, a 200 mm diameter steel pipe or steel screw pile or 300 mm diameter timber pile driven into the Sumas Drift deposits may be assumed to achieve a factored ULS axial capacity of 375 kN and an SLS axial capacity of 250 kN. Other pile types and configurations are expected to be feasible and may be assessed by GeoWest upon request.

Due to the variability of the fills on-site, debris or obstructions may be encountered during pile installation that require pre-augering of the fills to facilitate the installation of some piles. Or pile relocation may be required in some instances.

All piles should be separated by a minimum distance of 3 pile diameters to avoid group affects. For screw piles, the pile diameter should be based on the diameter of the largest helical plate.

Steel piles will be subject to long-term corrosion. We recommend that the structural engineer employ a steel loss rate of 0.022 mm/year when designing for corrosion. Corrosion will occur on both the outside and inside of the pipe piles unless the inside of the pipe is filled with concrete.

Piling of the structures will result in minimal post-construction building settlements. However, gradual settlement of the land beyond the buildings may occur due to the variability and poor compaction of the existing fills. Grade changes between the buildings and surrounding land may develop over time that may require periodic repair. Flexible couplings on all utilities entering and exiting the pile supported buildings are recommended. Repair or replacement of the flexible couplings and pipes may be required in the future, depending on the magnitude of differential settlement that occurs.

A pre-construction survey and vibration monitoring of structures surrounding the piling operation is recommended if driven piles are employed. Driving energies may have to be limited to avoid inducing excessive vibrations.

In accordance with the provisions of the 2018 BCBC, the Geotechnical Engineer is to have a representative on-site on a full-time basis during the installation of pile foundations.

6.7 Slab-on-Grade and Suspended Floors

The following geotechnical recommendations are provided for slabs-on-grade:

- Concrete floor slabs-on-grade should be underlain with a minimum 150 mm thick layer of 19 mm clear crushed rock.
- The slabs should be provided with sufficient joints for control of cracks from slab settlement and from thermal expansion and contraction.
- The under-slab gravel should be hydraulically connected to the perimeter drainage system, discussed in Section 6.9, if required.

A vapour barrier below the townhouse slabs is not required for any geotechnical purposes. However, our experience has shown that the presence of a vapour barrier can reduce shrinkage cracking by providing a slip surface between the concrete and underlying fill during the curing process. The necessity for a vapour barrier should be discussed with your architect.

On recent Abbotsford projects the City has required that the mechanical engineer include the rough in for a radon ventilation system below the slab-on-grade floor. The necessity of this system for this specific project will have to be confirmed by the City.

Floors of piled structures should be designed as suspended slabs or be pile supported. Utilities underlying suspended or piled slabs should be hung from galvanized steel hangers. Utilities supported by galvanized steel hangars should be bedded solely in pea gravel, with fill above the pipes comprising light weight materials only, such as Styrofoam. The design of the under-slab utilities, including the support measures, should be completed by the mechanical engineer.

6.8 Methane Control

A methane ventilation system is not required for the proposed buildings within the development.

6.9 Perimeter Drainage

Perimeter drainage is not required for any geotechnical purposes provided that:

- the interior slab-on-grade floor is constructed in accordance with our recommendations in Section 6.7;
- the top of the slab is located above the surrounding finished grade;
- the roof drainage system is connected to non-perforated drainpipes connected to a storm water disposal system located away from the building; and
- the site is graded by at least 2% to direct surface flows away from the building.

Where all of these conditions cannot be met, a perimeter foundation drainage system should be installed. Perimeter drainage is specifically required for any structures with buried basements.

6.10 On-Site Asphalt Pavement Structure

For on-site parking areas and non-truck traffic roadways where all existing fills are removed, it is recommended that the pavement structure be constructed with a minimum section of:

- 65 mm of asphaltic concrete surface course; underlain by
- 100 mm of 19 mm minus crushed gravel base course which has been compacted to not less than 100% SPD; underlain by
- 200 mm of 75 mm minus pit run sand and gravel subbase course which has been compacted to not less than 100% SPD; underlain by
- Geotechnical Engineer approved subgrade or compacted engineered fill placed over Geotechnical Engineer approved subgrade.

The thickness of asphalt and base in drive aisles and any other areas subject to truck loading (such as fire truck or garbage truck accesses) should be at least 75 and 150 mm, respectively.

The existing fills present on-site can be left in place in roadways so long as they do not interfere with the stripping recommendations for building foundations provided in Section 6.3 and there is acceptance of some potential long-term settlement of the variable fills. Due to the variable nature of the fills, an increase in the thickness of the subbase to 650 mm is recommended where these materials are left in place. The preceding recommendations for the thickness of asphalt and road base remain the same.

It is recommended that the granular base and subbase fills meet the gradation requirements stated in the Master Municipal Construction Documents (MMCD) Volume II. It is recommended that the Geotechnical Engineer review and approve all sources of candidate granular subgrade, subbase, and base fill materials prior to their placement at the site. This should include sieve analysis and Standard Proctor testing of representative samples of the candidate fill materials.

6.11 On-Site Trench Bedding and Backfill

The utility trench bedding and backfill for on-site utilities should be in accordance with MMCD Drawing No. G4. Imported pipe bedding should meet the gradation requirements stated in MMCD Section 02226, Article 2.7 (Gold Edition), Type 2 bedding.

Imported trench backfill should meet the gradation requirements for the materials stated in MMCD Section 02223, Article 2.2.3, and the referenced articles in Section 02226 in paved areas. The utility trench backfill should be compacted to 100% SPD in hard surfaced areas. The compaction may be reduced to 92% SPD in soft landscape areas.

6.12 Storm Water Infiltration

Based on the soil conditions and the topography of the site it is our opinion that the site is not suitable for storm water infiltration purposes. The site is better suited to detention type applications.

6.13 Lateral Earth Pressures

Below-grade foundation walls and retaining walls required for site grading purposes will be subject to both static and seismic earth pressures. The earth pressures will be dependent on the rigidity of the walls as well as the presence of temporary shoring or slopes adjacent to the foundation walls.

Walls constructed against a backfilled slope will develop an "active" pressure distribution if the wall is designed to be flexible. A foundation wall/retaining wall is deemed to be flexible if it is capable of lateral movement of at least 0.002H (metres), where H is the height of the wall in metres. We recommend the following earth pressures be used for design for this case:

STATIC (active)	5.5H (kPa) triangular soil pressure, where H is the total height of the wall in metres.
SEISMIC	2.5H (kPa) inverted triangular soil pressure.

The structural engineer will have to confirm if the walls possess the required flexibility to utilize an active earth pressure distribution. Walls that are not sufficiently flexible should be designed for "at-rest" conditions and a static pressure distribution of 8.3H (kPa) triangular soil pressure.

The seismic pressure distribution was estimated using the pseudo-static Mononobe-Okabe[1] (M-O) equations employing 70 percent of the site PGA.

Additional surcharge loads will increase the lateral earth pressure on the foundation and retaining walls and will have to be reviewed by GeoWest on a case-by-case basis.

The earth pressures provided are based on unfactored soil properties and so the earth pressures should be considered unfactored as well. The earth pressures provided also assume fully drained conditions adjacent to

[1] Mononobe, N and Matsuo M (1929). "On the Determination of Earth Pressures During Earthquakes" Proc. World Eng. Congress, 9, pp 179 -187

the walls, so the walls are to be provided with a drainage mat and/or free draining backfill tied into the perimeter drainage system. The earth pressures also assume that the surface of the retained soil is horizontal.

Foundation wall and retaining wall backfill should comprise free draining sand to sand and gravel with a minimum angle of internal friction of 36 degrees and a compacted unit weight of 19.5 kN/m^3. If backfill materials with differing properties are used, different earth pressures will be imposed on the walls, which will have to be re-assessed by GeoWest once the backfill material properties are defined.

For assessment of sliding resistance, a factored ultimate passive resistance based on an equivalent fluid pressure of 35 kPa/m and a factored coefficient of friction of 0.4 may be used where the foundation is constructed on a subgrade prepared in accordance with the recommendations in Section 6.3.

6.14 Temporary Excavation and Dewatering

It is anticipated that conventional excavation equipment can be used to excavate the site soils to the required depth for basements or remove unsuitable existing fills. As introduced above, the Sumas Drift may contain boulders that may require splitting or blasting to facilitate their removal from the excavation. The fills may also contain debris.

We expect that the temporary excavations for the building basements and removal of unsuitable fills, if conducted, will be sloped. We recommend that the unsupported side slopes of temporary excavations requiring worker access that are more than 1.2 m deep should not be steeper than 1H:1V (Horizontal:Vertical). Flatter temporary excavation slopes may be required if loose soil or perched groundwater is encountered.

We understand that a pump station is to be constructed at the southwest corner of the site. There is presently no design for the pump station. However, we understand from the civil engineer, Aplin & Martin Consultants Ltd., that a wet well depth of up to about 6 m is possible. We expect that an excavation to this depth would be shored with, for example, pre-engineered steel shoring cages or slide rail systems, or an engineered groundwater cut off design, as described below and if deemed necessary.

It is expected that groundwater and rainwater entering temporary excavations for the building basements and removal of unsuitable fills at the site could be adequately controlled using sumps and pumps. Excavation for the pump station at the southwest corner of the site is likely to encounter saturated Sumas Drift deposits below a depth of about 3 m, which will likely produce heavy seepage. Dewatering with vacuum well points and/or large sumps with sump pumps provided by a specialty dewatering contractor may be required in this circumstance. We recommend that the dewatering requirements be further assessed once the pump station design is further refined. For a deep wet well on the order of 6 m in depth, it should be appreciated that seepage rates may be sufficiently high that the excavation cannot be satisfactorily dewatered even with specialty dewatering methods. In this circumstance, the use of an engineered groundwater cut off excavation design utilizing, for example, concrete secant piles or jet grout to cut off the majority of the seepage into the excavation could be required. GeoWest can provide a groundwater cut off shoring design upon request and if required.

Discharge of water collected from temporary excavations should be conducted in accordance with the requirements of the project Erosion and Sediment Control (ESC) plan and the City of Abbotsford. GeoWest can prepare ESC design drawings and complete ESC monitoring for the project upon request.

6.15 Geotechnical Review

As required for Municipal building permit "Letters of Assurance", GeoWest will carry out sufficient field reviews during site preparation and construction to ensure that the geotechnical design recommendations contained within this report have been adequately communicated to the design team and to the contractors implementing the design. These field reviews are not carried out for the benefit of the contractors and therefore do not in any way affect the contractor's obligations to perform under the terms of their contract.

It is the contractors' responsibility to advise GeoWest (a minimum of 48 hours in advance) that a field review is required. Geotechnical field reviews are required at the time of the following work:

1. Stripping	– Review of stripping depth to suitable subgrade materials
2. Subgrade	– Review of pavement subgrade prior to fill placement and footing subgrades prior to pour
3. Piling	– Full time review of the installation of pile foundations, if incorporated into the structural design of the buildings
4. Engineered Fill	– Review of any engineered fill used to raise or restore grades for pavements or located below foundations or slabs
5. Slab-on-Grade	– Review of slab fill and compaction
6. Pavement	– Review of pavement subgrade proof rolling and pavement structure fill review and compaction

As indicated above, full-time review of pile installation by the Geotechnical Engineer is required under the 2018 BCBC Letters of Assurance.

It is critical that these reviews are carried out to ensure that our intentions have been adequately communicated. It is also critical that contractors working on the site view this document in advance of any work being carried out so that they become familiarised with the sensitive aspects of the works proposed. It is the responsibility of the developer and contractor to notify GeoWest when conditions or situations not outlined within this document are encountered.

7. CLOSURE

This revised geotechnical assessment report has been prepared by GeoWest Engineering Ltd. exclusively for Raicon Developments Inc. and those on their design team for this specific project. The report may also be relied upon by the City of Abbotsford as part of their permitting process. The information contained in this report reflects our judgement in light of the information provided to us at the time it was prepared.

Any use of this report by third parties, or any reliance on or decisions made based on it, are the responsibility of such third parties. GeoWest does not accept responsibility for damages suffered, if any, by a third party as a result of their use of or reliance on this report.

The attached Terms of Reference form an integral part of this report.

GeoWest trusts this meets your immediate requirements. If you have any questions or require further information, please contact us.

Yours truly,
GeoWest Engineering Ltd.

Per: John Carter, M.Eng., P.Eng.
Principal, Senior Geotechnical Engineer

REVIEWED BY:

Michael Gutwein, P.Eng.
Senior Geotechnical Engineer

JC/icw

Attachments: Terms of Reference
Figures 1 to 4
Soil Logs
Appendix A – Atelier Pacific Architecture Site Plan
Appendix B – Topographic Survey

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GeoWest prepared the Report for the Client for the specific site, development, building, design or building assessment objectives and purpose that the Client described to GeoWest. The applicability and reliability of any of the information, observations, findings, suggestions, recommendations and opinions contained in the Report are only valid to the extent that there was no material alteration to or variation from any of the said descriptions provided by the Client to GeoWest unless the Client specifically requested GeoWest to review and revise the Report in light of such alteration or variation.

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5. INTERPRETATION OF THE REPORT

a. **Nature and Exactness of Descriptions:** The classification and identification of soils, rocks and geological units, as well as engineering assessments and estimates have been based on investigations performed in accordance with the standards set out in Paragraph 1 above. The classification and identification of these items are judgmental in nature and even comprehensive sampling and testing programs, implemented with the appropriate equipment by experienced personnel, may fail to locate some conditions. All investigations or assessments utilizing the standards of Paragraph 1 involve an inherent risk that some conditions will not be detected and all documents or records summarizing such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and all persons making use of such documents or records should be aware of, and accept, this risk. Some conditions are subject to changes over time and the parties making use of the Report should be aware of this possibility and understand that the Report only presents the conditions at the sampled points at the time of sampling. Where special concerns exist, or when the Client has special considerations or requirements, the Client must disclose them to GeoWest so that additional or special investigations may be undertaken, which would not otherwise be within the scope of investigations made by GeoWest or the purposes of the Report.

b. **Reliance on Information:** The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site investigation and field review and on the basis of information provided by GeoWest. GeoWest has relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, GeoWest cannot accept responsibility for any deficiency, misstatement or inaccuracy contained in the report as a result of misstatements, omissions, misrepresentations or fraudulent acts of persons providing information.

c. **Additional Involvement by GeoWest:** To avoid misunderstandings, GeoWest should be retained to assist other professionals to explain relevant engineering findings and to review the geotechnical aspects of the plans, drawings and specifications of other professionals relative to the engineering issues pertaining to the geotechnical consulting services provided by GeoWest. To ensure compliance and consistency with the applicable building codes, legislation, regulations, guidelines and generally-accepted practices, GeoWest should also be retained to provide field review services during the performance of any related work. Where applicable, it is understood that such field review services must meet or exceed the minimum necessary requirements to ascertain that the work being carried out is in general conformity with the recommendations made by GeoWest. Any reduction from the level of services recommended by GeoWest will result in GeoWest providing qualified opinions regarding adequacy of work.

6. ALTERNATE REPORT FORMAT

When GeoWest submits both electronic and hard copy versions of the Instruments of Professional Services, the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding upon GeoWest. The hard copy versions submitted by GeoWest shall be the original documents for record and working purposes, and, in the event of a dispute or discrepancy, the hard copy versions shall govern over the electronic versions; furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed and sealed versions of the Instruments of Professional Services maintained or retained, or both, by GeoWest shall be deemed to be the overall originals for the Project.

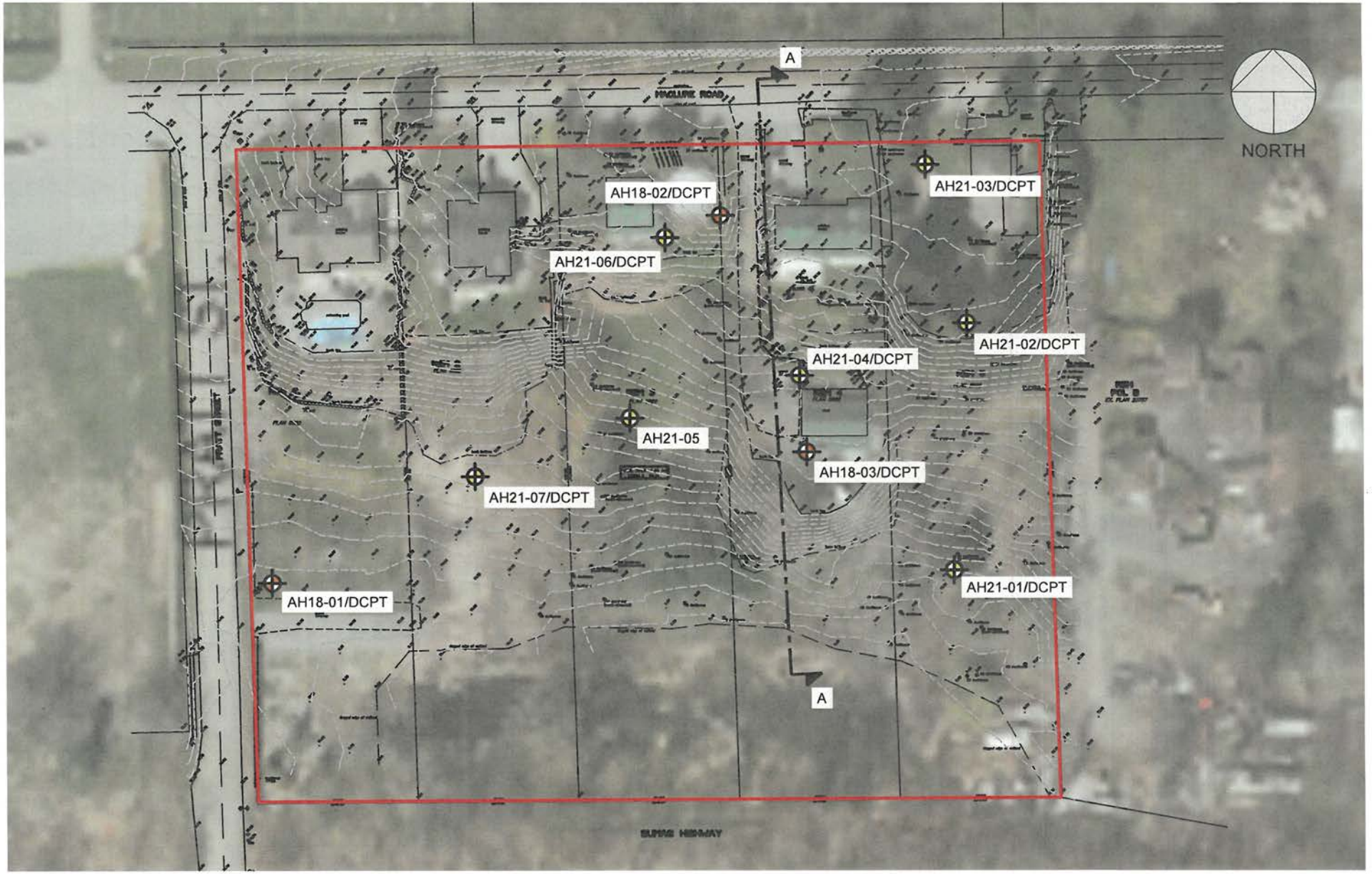
The Client agrees that the electronic file and hard copy versions of Instruments of Professional Services shall not, under any circumstances, no matter who owns or uses them, be altered by any party except GeoWest. The Client warrants that the Instruments of Professional Services will be used only and exactly as submitted by GeoWest.

The Client recognizes and agrees that GeoWest prepared and submitted electronic files using specific software or hardware systems, or both. GeoWest makes no representation about the compatibility of these files with the current or future software and hardware systems of the Client, the Approved Users or any other party. The Client further agrees that GeoWest is under no obligation, unless otherwise expressly specified, to provide the Client, the Approved Users and any other party, or any or all of them, with specific software and hardware systems that are compatible with the electronic files submitted by GeoWest. The Client further agrees that should the Client, an Approved User or a third party require GeoWest to provide specific software or hardware systems or both, compatible with electronic files prepared and submitted by GeoWest, for any reason whatsoever included but not restricted to and order from a court, then the Client will pay GeoWest for all reasonable costs related to the provision of the specific software or hardware systems, or both. The Client further agrees to indemnify and hold harmless GeoWest, its officers, directors, employees, agents, representative or sub-consultant, or any or all of them, against any claim or any nature whatsoever brought against GeoWest, whether in contract or in tort, arising or related to the provision or use or any specific software or hardware provided by GeoWest.

FIGURES

LEGEND	ADAPTED FROM: CITY OF ABBOTSFORD WEB MAP PROJECT/DWG. NO: - DATE: - This drawing is the sole property of GeoWest Engineering Ltd. and cannot be used or duplicated in any way without the expressed written consent of GeoWest. The general contractor shall verify all dimensions and report any discrepancies to GeoWest.	TITLE: **SITE LOCATION MAP** PROJECT: PROPOSED MULTI-FAMILY DEVELOPMENT ADDRESS: 34010 TO 34074 MACLURE ROAD, ABBOTSFORD, BC CLIENT: RAICON DEVELOPMENTS INC.	GeoWest ENGINEERING *EGBC PERMIT TO PRACTICE NO. 1000607*	DESIGN: - / DATE: OCT. 2021 DRAWN: ML / SCALE: CHECK: JC / GEOWEST FILE: GA21-1287-00 FIG. NO: 1	

FILE PATH:C:\Users\RyanKroeker\GeoWest\GeoWest - Projects\!Projects\2021\GA21-1287-00 Raicon, Geo, 34010 to 34074 Maclure Rd, Abbi\Figures FILE NAME:GA21-1287-00 Figures 1 & 2



LEGEND

- 2021 AUGER HOLE LOCATION
- 2018 AUGER HOLE LOCATION
- SITE BOUNDARY
- CROSS-SECTION

NOTE: ALL LOCATIONS ARE APPROXIMATE

ADAPTED FROM: ELEVATE LAND SURVEYING LTD.

PROJECT/DWG. NO: TOPO SITE PLAN OF LOTS 1 TO 5

DATE: APRIL 29, 2021

TITLE: **AUGER HOLE LOCATION PLAN**

PROJECT: PROPOSED MULTI-FAMILY DEVELOPMENT

ADDRESS: 34010 TO 34074 MACLURE ROAD, ABBOTSFORD, BC

CLIENT: RAICON DEVELOPMENTS INC.

GeoWest ENGINEERING

EGBC PERMIT TO PRACTICE NO. 1000607

DESIGN:	DATE:
-	OCT. 2021
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CHECK: JC	GEOWEST FILE: GA21-1287-00
FIG. NO: 2	

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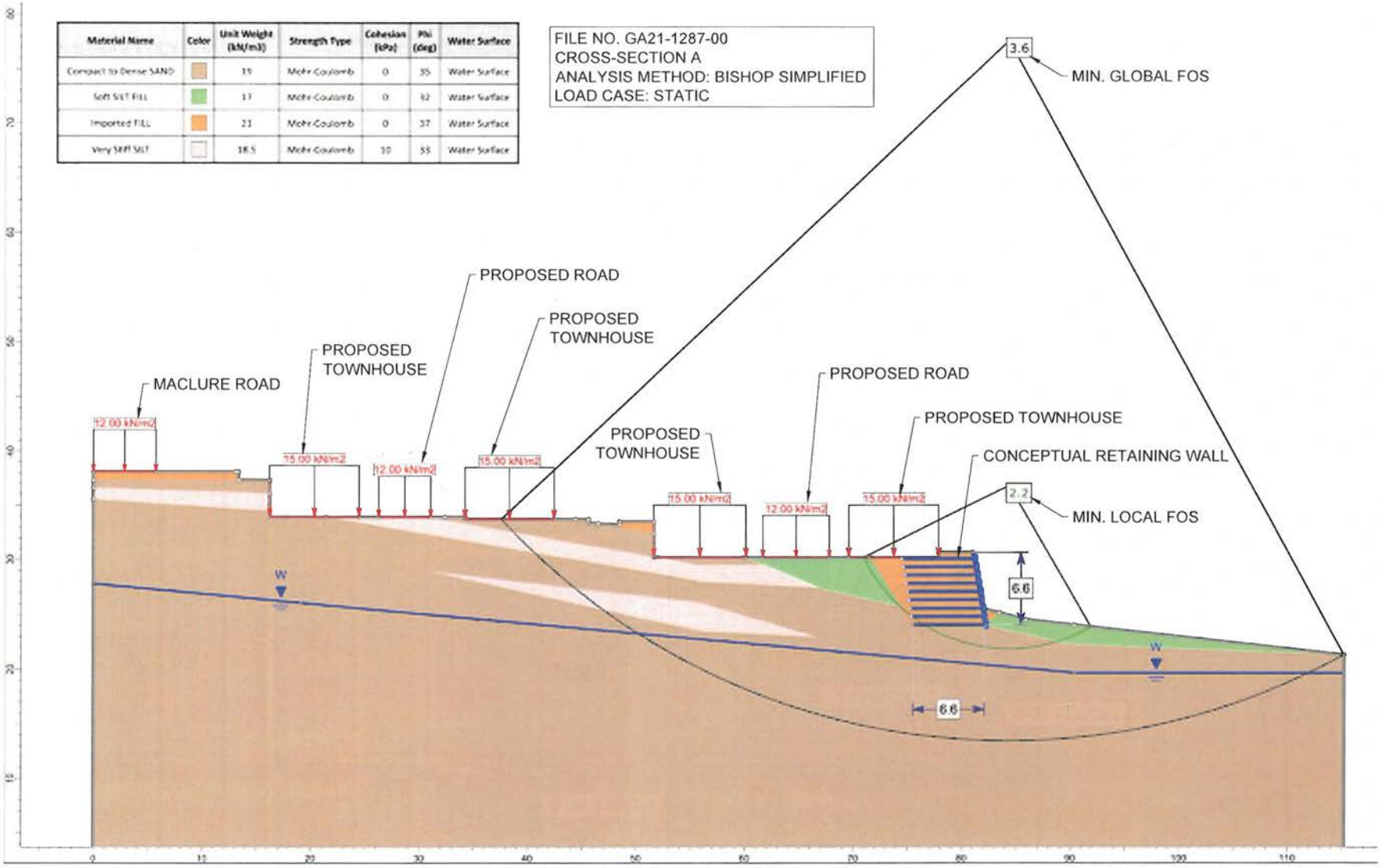
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface
Compact to Dense SAND		19	Mohr-Coulomb	0	35	Water Surface
Soft SILT FILL		17	Mohr-Coulomb	0	32	Water Surface
Imported FILL		21	Mohr-Coulomb	0	37	Water Surface
Very Stiff SILT		18.5	Mohr-Coulomb	10	55	Water Surface

FILE NO. GA21-1287-00
CROSS-SECTION A
ANALYSIS METHOD: BISHOP SIMPLIFIED
LOAD CASE: STATIC



LEGEND

ADAPTED FROM: ROCSCIENCE - SLIDE 2018

PROJECT/DWG. NO: -

DATE: -

TITLE: **SLOPE STABILITY ANALYSIS CROSS-SECTION A - STATIC**

PROJECT: PROPOSED MULTI-FAMILY DEVELOPMENT

ADDRESS: 34010 TO 34074 MACLURE ROAD, ABBOTSFORD, BC

CLIENT: RAICON DEVELOPMENTS INC.

GeoWest ENGINEERING

EGBC PERMIT TO PRACTICE NO. 1000607

DESIGN: -	DATE: OCT. 2021
DRAWN: ML	SCALE:
CHECK: JC	GEOWEST FILE: GA21-1287-00
FIG. NO: 3	

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Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface
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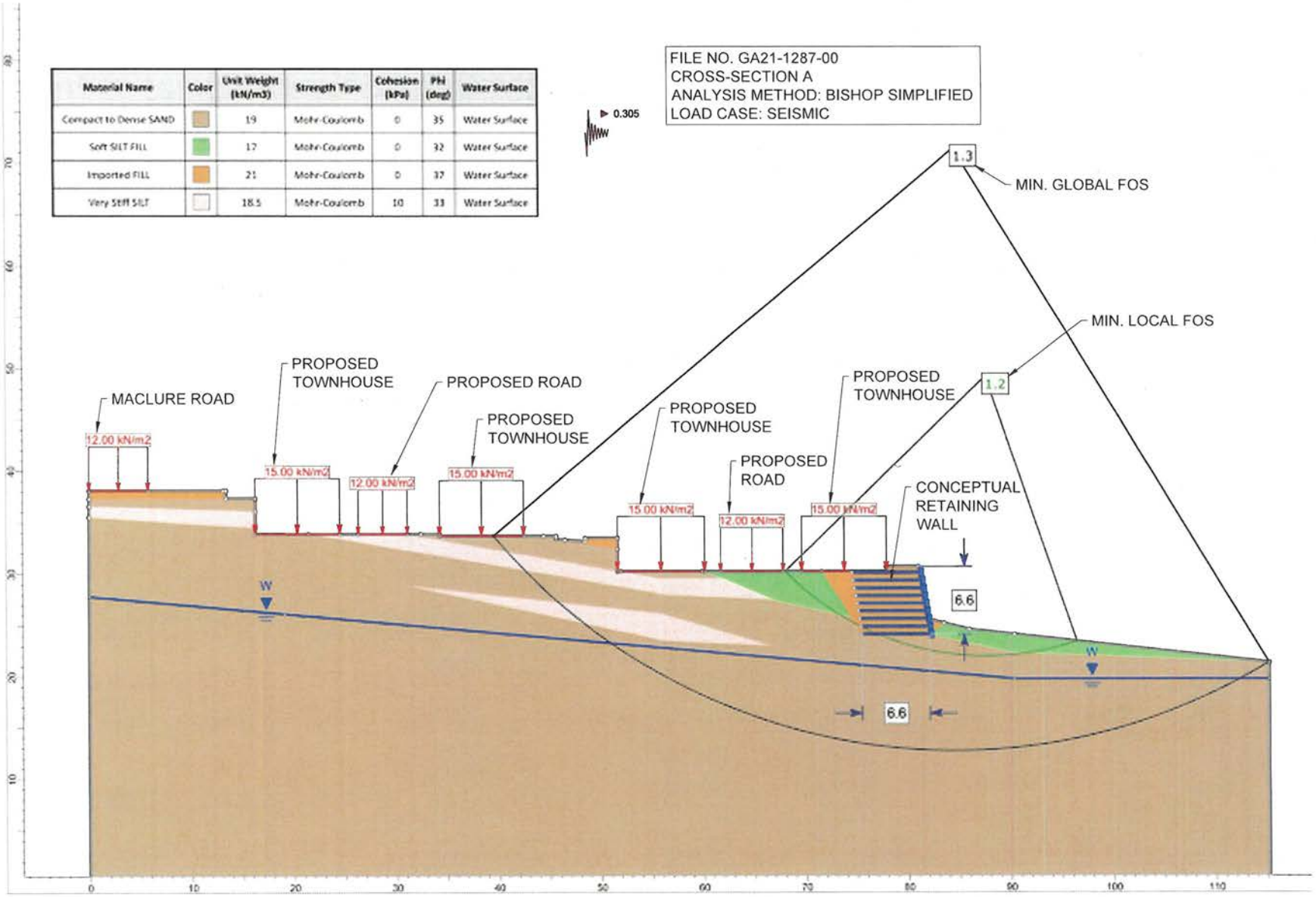
Soft SILT FILL		17	Mohr-Coulomb	0	32	Water Surface
Imported FILL		21	Mohr-Coulomb	0	37	Water Surface
Very Stiff SILT		18.5	Mohr-Coulomb	10	33	Water Surface

FILE NO. GA21-1287-00
CROSS-SECTION A
ANALYSIS METHOD: BISHOP SIMPLIFIED
LOAD CASE: SEISMIC



LEGEND

ADAPTED FROM: ROCSCIENCE - SLIDE 2018

PROJECT/DWG. NO: -

DATE: -

TITLE: **SLOPE STABILITY ANALYSIS CROSS-SECTION A - SEISMIC**

PROJECT: PROPOSED MULTI-FAMILY DEVELOPMENT

ADDRESS: 34010 TO 34074 MACLURE ROAD, ABBOTSFORD, BC

CLIENT: RAICON DEVELOPMENTS INC.

GeoWest ENGINEERING

EGBC PERMIT TO PRACTICE NO. 1000607

DESIGN: -	DATE: OCT. 2021
DRAWN: ML	SCALE:
CHECK: JC	GEOWEST FILE: GA21-1287-00
FIG. NO: 4	

FILE PATH:C:\Users\RyanKroeker\GeoWest\GeoWest - Projects\Projects\2021\GA21-1287-00 Raicon, Geo, 34010 to 34074 Maclure Rd, Abb\Figures FILE NAME:GA21-1287-00 Figures 1 & 2

GeoWest
ENGINEERING

SOIL LOGS

GeoWest Engineering Ltd
200-34425 McConnell Road
Abbotsford, BC V2S 7P1

Raicon Developments Inc.
34010 - 34074 Maclure Road
Abbotsford, BC

AH18-01/DCPT

Project No: GA21-1287-00

Depth (m)	Depth (ft)	Description	C	N	Type/ Sample #	Water Level
		loose/ firm, tan, silty SAND / sandy SILT, trace gravel, trace rootlets, moist, fill. Overlain by nominal thickness of grass covered topsoil.			G1	
	2	firm, dark brown, SILT, trace sand, some organics, trace gravel, moist, fill.				
	4				G2	
		firm to hard, grey, clayey SILT, trace sand, moist.				P1 Nov 27 2018
2	6					
	8				G4	
	10				G3	
	12	compact to very dense, brown/grey, SAND and GRAVEL, trace silt, saturated. Gravel - max 75 mm dia. observed, Sand - medium to coarse grained, poor sample recovery.				
4	14				G5	
	16	- sand predominantly coarse grained below 4.6 m.				
	18				G6	
6	20	dense, grey, fine-grained SAND, some silt, some gravel, saturated. Gravel- sub-rounded, max 50 mm dia. observed.				
	22					
	24				G7	
		Groundwater seepage at 1.5 m below grade. Bottom of hole at 7.6 metres				
8	26					
	28					
	30					
	32					

10 20 30 40 50 60 70 80 90

C: Condition of Sample
Good
Disturbed
No Recovery

Type: Type of Sampler
SPT : 2 in. standard
ST : Shelby
G : Grab
AU: Auger Flight

N: Number of Blows
WH : Weight of Hammer
WR : Weight of Rod
Standard Penetration Test : ASTM D1586
Hammer Type: Trip Hammer

DYNAMIC CONE PENETRATION TEST

Plastic Limit (%) Liquid Limit (%)
Moisture Content (%)
Ground Water Level
Shear strength in kPa (Torvane)
PP Pocket Penetrometer (compressive strength in kPa)
Shear strength in kPa (Unconfined)
Shear strength in kPa (Field vane)
Remolded strength in kPa
Percent Passing # 200 sieve

Drill Method: Solid Stem Auger / DCPT
Date Drilled: 11/27/2018
Logged by: RK/BO
Checked by: JC

SOIL CLASSIFICATION IN ACCORDANCE WITH THE CANADIAN FOUNDATION ENGINEERING MANUAL 4TH EDITION 2006.

1 LOG PER PAGE 11/9/21

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Abbotsford, BC V2S 7P1

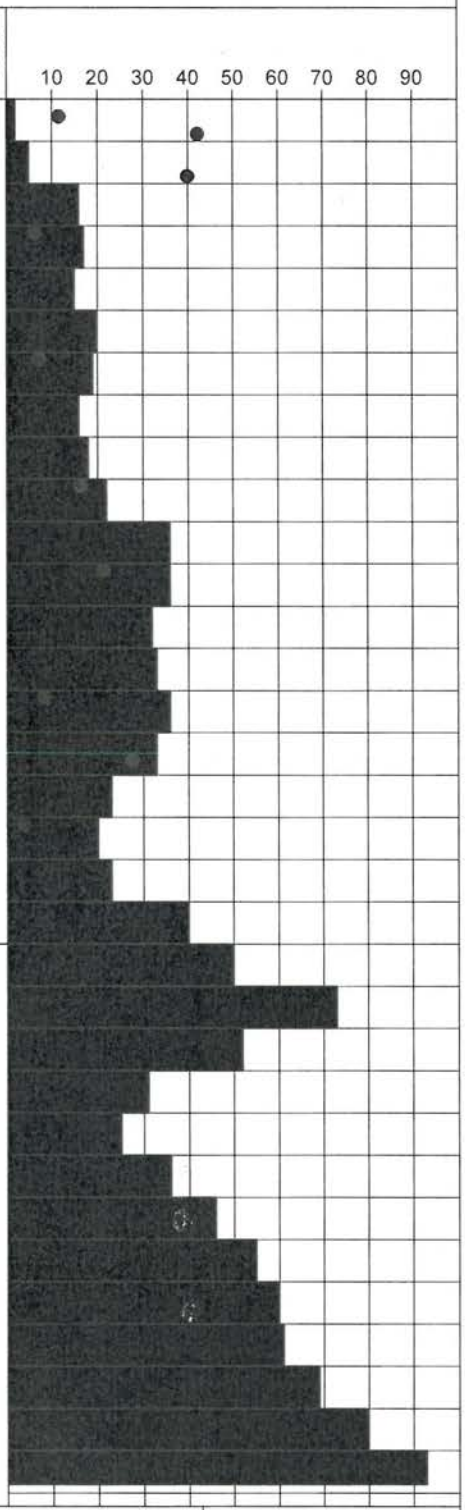
Raicon Developments Inc.
34010 - 34074 Maclure Road
Abbotsford, BC

AH18-02/DCPT

Project No: GA21-1287-00

Depth (m)	Depth (ft)	Description	C	N	Type/ Sample #	Water Level
		loose, grey, SAND and GRAVEL, trace to some silt, moist, fill.			G1	
					G2	
	2	firm, dark brown, SILT, some organics, trace fine gravel, trace rootlets, moist. Possible old topsoil layer.			G3	
		firm to hard, light brown, SILT, trace fine sand, trace gravel, moist.			G4	
	4	compact, brown, GRAVEL, some sand, trace silt, moist.				
		- becomes grey, SAND and GRAVEL below 1.5 m.				
2	6				G5	
		compact to dense / stiff to hard, grey/light brown, silty fine-grained SAND / fine-grained sandy SILT, moist.				
	8				G6	
	10					
					G7	
	12					
4		dense, grey/brown, medium-grained SAND, trace silt, trace fine gravel, moist.				
	14				G8	
	16	hard, brown, SILT, some clay to clayey, trace sand, moist to wet.			G9	
		compact to dense, brown/grey, SAND, trace fine gravel, moist.			G10	
	18					
6	20					
		No groundwater seepage observed. Bottom of hole at 6.1 metres				
	22					
	24					
8	26					
	28					
	30					
	32					

Continued on Pg 2 of 2



C: Condition of Sample
Good
Disturbed
No Recovery

Type: Type of Sampler
SPT : 2 in. standard
ST : Shelby
G : Grab
AU: Auger Flight

SOIL CLASSIFICATION IN ACCORDANCE WITH THE CANADIAN FOUNDATION ENGINEERING MANUAL 4TH EDITION 2006.

N: Number of Blows
WH : Weight of Hammer
WR : Weight of Rod
Standard Penetration Test : ASTM D1586
Hammer Type: Trip Hammer

DYNAMIC CONE PENETRATION TEST

Plastic Limit (%) — Liquid Limit (%)
Moisture Content (%)
Ground Water Level
Shear strength in kPa (Torvane)
PP Pocket Penetrometer (compressive strength in kPa)
Shear strength in kPa (Unconfined)
Shear strength in kPa (Field vane)
Remolded strength in kPa
Percent Passing # 200 sieve

Drill Method: Solid Stem Auger / DCPT
Date Drilled: 11/27/2018
Logged by: BO/TS
Checked by: JC

1 LOG PER PAGE 11/9/21

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Abbotsford, BC V2S 7P1

Raicon Developments Inc.
34010 - 34074 Maclure Road
Abbotsford, BC

AH18-02/DCPT

Project No: GA21-1287-00

Depth (m)	Depth (ft)	Description	C	N	Type/ Sample #	Water Level
	34					
	36					
	38					
12	40					
	42					
	44					
14	46					
	48					
	50					
16	52					
	54					
	56					
18	58					
	60					
	62					
	64					

10 20 30 40 50 60 70 80 90

C: Condition of Sample
Good
Disturbed
No Recovery

Type: Type of Sampler
SPT : 2 in. standard
ST : Shelby
G : Grab
AU: Auger Flight

N: Number of Blows
WH : Weight of Hammer
WR : Weight of Rod
Standard Penetration Test : ASTM D1586
Hammer Type: Trip Hammer

DYNAMIC CONE PENETRATION TEST

Plastic Limit (%) Liquid Limit (%)
Moisture Content (%)
Ground Water Level
Shear strength in kPa (Torvane)
PP Pocket Penetrometer (compressive strength in kPa)
Shear strength in kPa (Unconfined)
Shear strength in kPa (Field vane)
Remolded strength in kPa
Percent Passing # 200 sieve

Drill Method: Solid Stem Auger / DCPT
Date Drilled: 11/27/2018
Logged by: BO/TS
Checked by: JC

SOIL CLASSIFICATION IN ACCORDANCE WITH THE CANADIAN FOUNDATION ENGINEERING MANUAL 4TH EDITION 2006.

1 LOG PER PAGE 11/9/21

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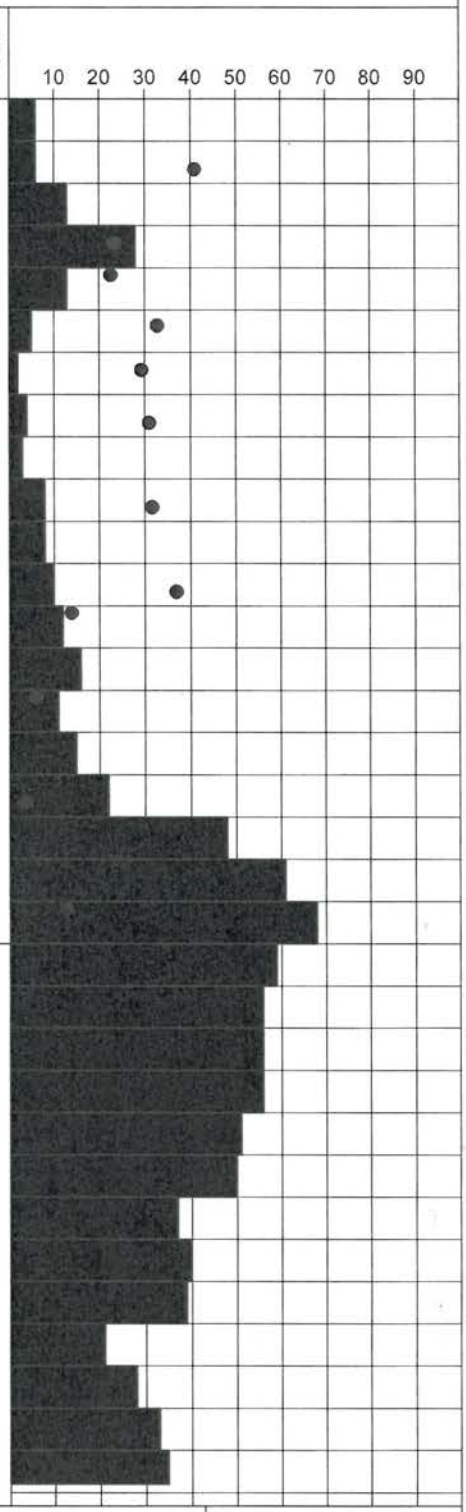
Raicon Developments Inc.
34010 - 34074 Maclure Road
Abbotsford, BC

AH18-03/DCPT

Project No: GA21-1287-00

Depth (m)	Depth (ft)	Description	C	N	Type/ Sample #	Water Level
		loose, black, crushed ASPHALT, moist, fill.				
	2	firm to stiff, brown, SILT, some organics, trace sand, trace fine gravel, fill.			G1	
	4	hard to firm, grey, SILT, some sand, moist, fill.			G2	
		- brown below 1.1 m.			G3	
	6	firm to soft, grey, SILT, trace fine sand, trace fine gravel, trace organics, moist to wet, fill.			G4	
2					G5	
	8	soft to firm, dark brown/dark grey, SILT, some organics, trace fine gravel, trace sand, fill.			G6	
	10	firm to stiff, brown/orange, SILT, some organics, some sand, trace gravel, moist.			G7	
	12				G8	
		stiff, light brown, SILT, trace to some fine sand, trace fine gravel, moist.			G9	
4	14	compact, light brown, SAND and GRAVEL, trace silt, moist. Gravel - predominanlty fine, sub-rounded.			G10	
	16				G11	
	18	dense to very dense, grey/light brown, SAND, trace fine gravel, trace silt, moist.			G12	
6	20	Perched water observed at 1.8 m below grade. Bottom of hole at 6.1 metres				
	22					
	24					
8	26					
	28					
	30					
	32					

Continued on Pg 2 of 2



C: Condition of Sample
Good
Disturbed
No Recovery

Type: Type of Sampler
SPT : 2 in. standard
ST : Shelby
G : Grab
AU: Auger Flight

SOIL CLASSIFICATION IN ACCORDANCE WITH THE CANADIAN FOUNDATION ENGINEERING MANUAL 4TH EDITION 2006.

N: Number of Blows
WH : Weight of Hammer
WR : Weight of Rod
Standard Penetration Test : ASTM D1586
Hammer Type: Trip Hammer

DYNAMIC CONE PENETRATION TEST

Plastic Limit (%) — Liquid Limit (%)
Moisture Content (%)
Ground Water Level
Shear strength in kPa (Torvane)
PP Pocket Penetrometer (compressive strength in kPa)
Shear strength in kPa (Unconfined)
Shear strength in kPa (Field vane)
Remolded strength in kPa
Percent Passing # 200 sieve

Drill Method: Solid Stem Auger / DCPT
Date Drilled: 11/27/2018
Logged by: BO/TS
Checked by: JC

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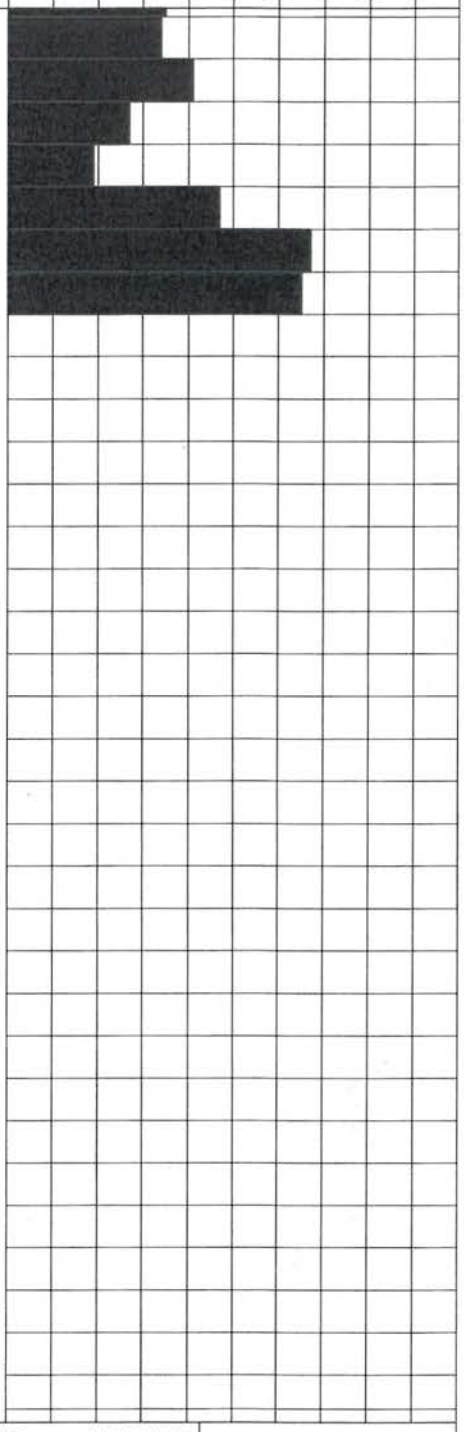
Raicon Developments Inc.
34010 - 34074 Maclure Road
Abbotsford, BC

AH18-03/DCPT

Project No: GA21-1287-00

Depth (m)	Depth (ft)	Description	C	N	Type/ Sample #	Water Level
	34					
	36					
	38					
12	40					
	42					
	44					
14	46					
	48					
	50					
16	52					
	54					
	56					
18	58					
	60					
	62					
	64					



C: Condition of Sample
Good
Disturbed
No Recovery

Type: Type of Sampler
SPT : 2 in. standard
ST : Shelby
G : Grab
AU: Auger Flight

N: Number of Blows
WH : Weight of Hammer
WR : Weight of Rod
Standard Penetration Test : ASTM D1586
Hammer Type: Trip Hammer

DYNAMIC CONE PENETRATION TEST

Plastic Limit (%) — Liquid Limit (%)
Moisture Content (%)

- Ground Water Level
- Shear strength in kPa (Torvane)
- PP Pocket Penetrometer (compressive strength in kPa)
- Shear strength in kPa (Unconfined)
- Shear strength in kPa (Field vane)
- Remolded strength in kPa
- Percent Passing # 200 sieve

Drill Method: Solid Stem Auger / DCPT
Date Drilled: 11/27/2018
Logged by: BO/TS
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SOIL CLASSIFICATION IN ACCORDANCE WITH THE CANADIAN FOUNDATION ENGINEERING MANUAL 4TH EDITION 2006.

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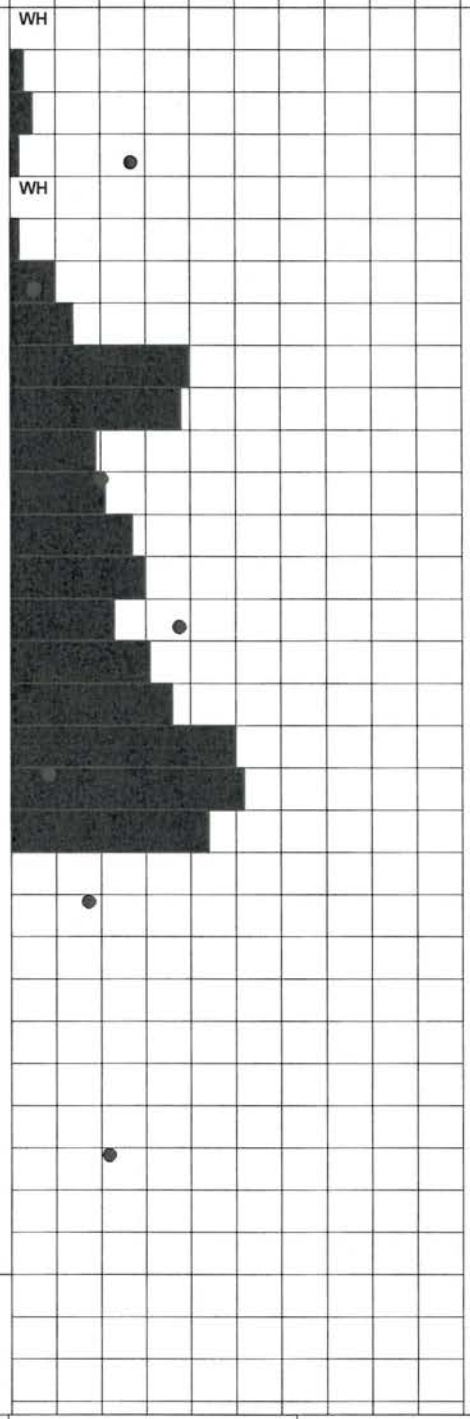
Raicon Developments Inc.
34010 - 34074 Maclure Road
Abbotsford, BC

AH21-01/DCPT

Project No: GA21-1287-00

Depth (m)	Depth (ft)	Description	C	N	Type/ Sample #	Water Level
Elev. 15.0m (Approx.)						
		Soft, brown, grass covered, TOPSOIL, moist.				
	2	Very soft, brown, sandy SILT, trace organics, moist, fill.				
	4				AU1	
	6	Compact to dense, grey/brown, fine-grained SAND, trace to some silt, moist.				
2					AU2	
	8					
	10	Compact, grey, fine-grained SAND, some silt to silty, moist to wet. - wet below 4.4 m				
	12				AU3	
4						
	14				AU4	
	16	Dense to very dense, grey/brown, fine-grained SAND, trace to some silt, wet.				
	18				AU5	
6						
	20	Compact to dense, grey/brown, fine-grained SAND, trace to some silt, trace gravel, wet.				
	22				AU6	
	24					
8	26					
	28				AU7	
	30	Groundwater seepage observed at 4.4 m below grade. Bottom of hole at 9.1 metres				
	32					



Elevation (m)	Elevation (ft)
Elev. 15.0m (Approx.)	
14	46
	48
	44
	42
12	40
	38
	36
	34
10	32
	30
	28
8	26
	24
	22
6	20
	18

C: Condition of Sample
Good
Disturbed
No Recovery

Type: Type of Sampler
SPT : 2 in. standard
ST : Shelby
G : Grab
AU: Auger Flight

N: Number of Blows
WH : Weight of Hammer
WR : Weight of Rod
Standard Penetration Test : ASTM D1586
Hammer Type: Trip Hammer

DYNAMIC CONE PENETRATION TEST

Plastic Limit (%) — Liquid Limit (%)
Moisture Content (%)
Ground Water Level
Shear strength in kPa (Torvane)
PP Pocket Penetrometer (compressive strength in kPa)
Shear strength in kPa (Unconfined)
Shear strength in kPa (Field vane)
Remolded strength in kPa
Percent Passing # 200 sieve

Drill Method: Solid Stem Auger / DCPT
Date Drilled: 10/18/2021
Logged by: LA
Checked by: JC

SOIL CLASSIFICATION IN ACCORDANCE WITH THE CANADIAN FOUNDATION ENGINEERING MANUAL 4TH EDITION 2006.

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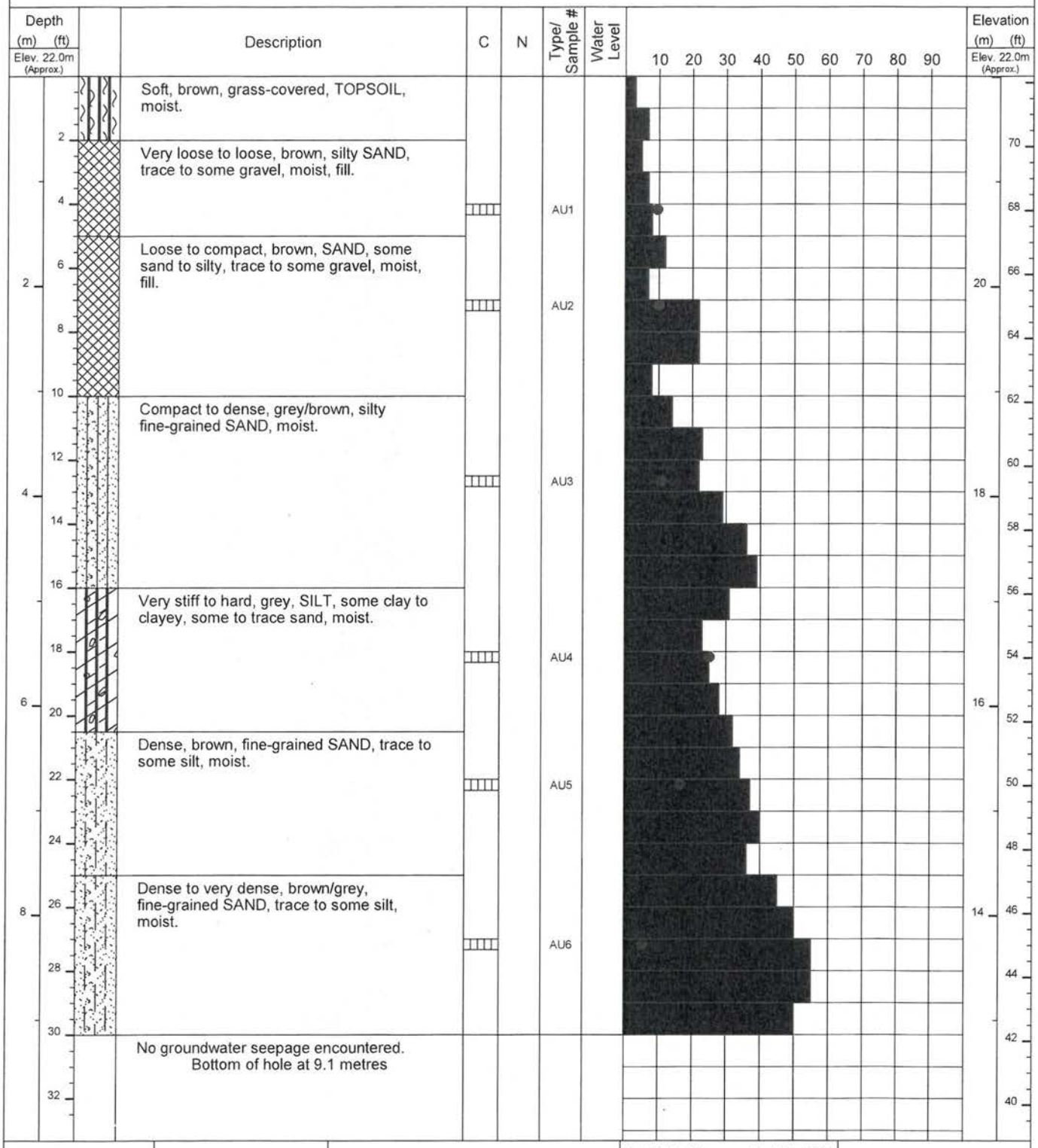
Raicon Developments Inc.
34010 - 34074 Maclure Road
Abbotsford, BC

AH21-02/DCPT

Project No: GA21-1287-00



C: Condition of Sample
Good
Disturbed
No Recovery

Type: Type of Sampler
SPT : 2 in. standard
ST : Shelby
G : Grab
AU: Auger Flight

N: Number of Blows
WH : Weight of Hammer
WR : Weight of Rod
Standard Penetration Test : ASTM D1586
Hammer Type: Trip Hammer

DYNAMIC CONE PENETRATION TEST

Plastic Limit (%) Liquid Limit (%)
Moisture Content (%)
Ground Water Level
Shear strength in kPa (Torvane)
PP Pocket Penetrometer (compressive strength in kPa)
Shear strength in kPa (Unconfined)
Shear strength in kPa (Field vane)
Remolded strength in kPa
Percent Passing # 200 sieve

Drill Method: Solid Stem Auger / DCPT
Date Drilled: 10/18/2021
Logged by: LA
Checked by: JC

SOIL CLASSIFICATION IN ACCORDANCE WITH THE CANADIAN FOUNDATION ENGINEERING MANUAL 4TH EDITION 2006.

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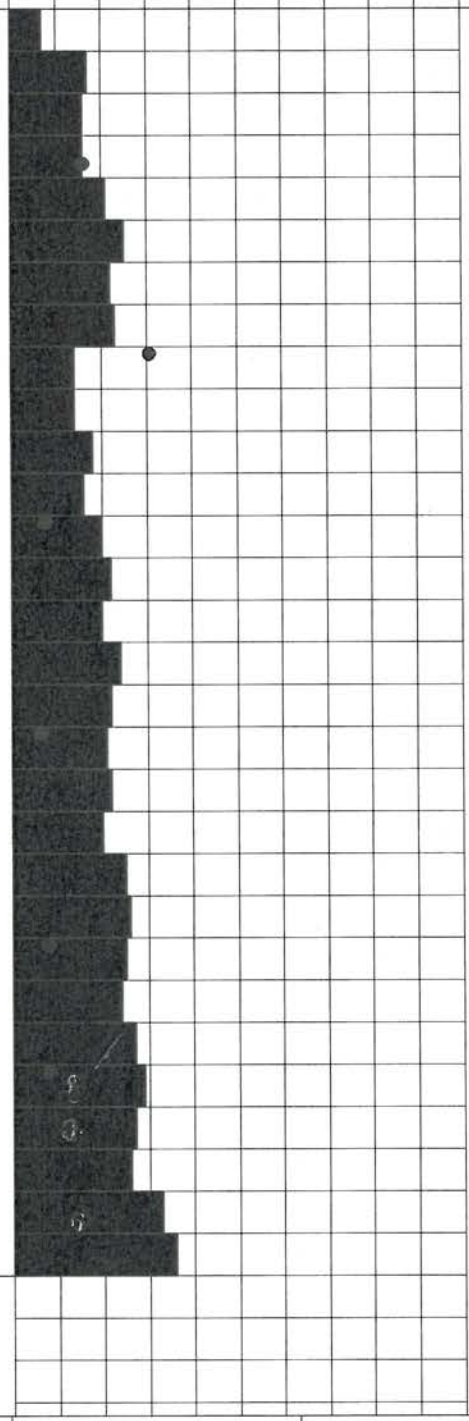
Raicon Developments Inc.
34010 - 34074 Maclure Road
Abbotsford, BC

AH21-03/DCPT

Project No: GA21-1287-00

Depth (m)	Depth (ft)	Description	C	N	Type/ Sample #	Water Level
Elev. 24.0m (Approx.)						
		Soft, brown, grass-covered, TOPSOIL, moist.				
	2	Compact, brown, fine-grained SAND, trace to some silt, trace gravel, moist.				
	4				AU1	
	6					
2		Stiff to very stiff, brown, SILT, some fine-grained sand to sandy, moist.				
	8				AU2	
	10	Compact, brown, fine-grained SAND, trace to some silt, trace gravel, moist.				
	12				AU3	
4						
	14					
	16					
	18				AU4	
6						
	20					
	22				AU5	
	24					
	26	Compact to dense, brown/grey, SAND, trace to some silt, trace gravel, moist.			AU6	
8						
	28					
	30	No groundwater seepage observed. Bottom of hole at 9.1 metres				
	32					



Elevation (m)	Elevation (ft)
Elev. 24.0m (Approx.)	
	78
	76
	74
22	72
	70
	68
20	66
	64
	62
18	60
	58
	56
	54
16	52
	50
	48
14	46

C: Condition of Sample
Good
Disturbed
No Recovery

Type: Type of Sampler
SPT : 2 in. standard
ST : Shelby
G : Grab
AU: Auger Flight

N: Number of Blows
WH : Weight of Hammer
WR : Weight of Rod
Standard Penetration Test : ASTM D1586
Hammer Type: Trip Hammer

DYNAMIC CONE PENETRATION TEST

Plastic Limit (%) — Liquid Limit (%)
Moisture Content (%)
Ground Water Level
Shear strength in kPa (Torvane)
PP Pocket Penetrometer (compressive strength in kPa)
Shear strength in kPa (Unconfined)
Shear strength in kPa (Field vane)
Remolded strength in kPa
Percent Passing # 200 sieve

Drill Method: Solid Stem Auger / DCPT
Date Drilled: 10/18/2021
Logged by: LA
Checked by: JC

SOIL CLASSIFICATION IN ACCORDANCE WITH THE CANADIAN FOUNDATION ENGINEERING MANUAL 4TH EDITION 2006.

1 LOG PER PAGE 11/6/21

GeoWest Engineering Ltd
200-34425 McConnell Road
Abbotsford, BC V2S 7P1

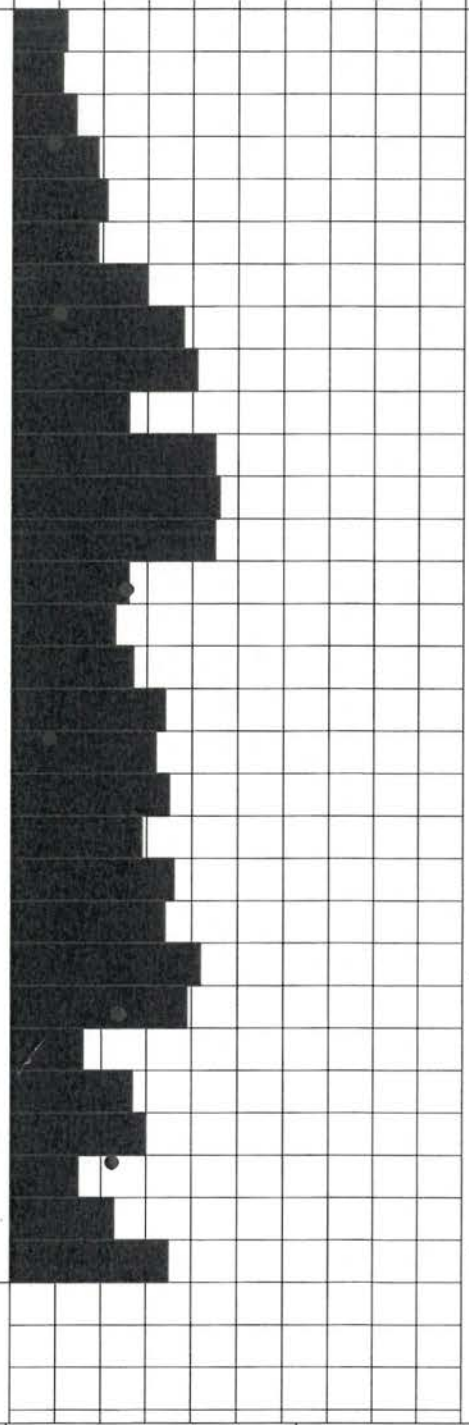
Raicon Developments Inc.
34010 - 34074 Maclure Road
Abbotsford, BC

AH21-04/DCPT

Project No: GA21-1287-00

Depth (m)	Depth (ft)	Description	C	N	Type/ Sample #	Water Level
		Compact, 19mm minus GRAVEL, moist, fill.				
		Compact, brown, silty SAND and GRAVEL, fine to medium-grained sand, subrounded to subangular gravel, moist, possible fill.				
		Compact, brown, fine-grained SAND, trace to some silt, trace gravel, moist.			AU1	
2	6	Compact to dense, brown, fine-grained SAND, some silt to silty, moist.			AU2	
4	14	Compact to dense, brown/grey, sandy SILT, fine-grained sand, moist.			AU3	
		Compact to dense, brown, fine-grained SAND, trace silt, trace gravel, moist.			AU4	
6	20	Very stiff to hard, brown-grey, SILT, some sand to sandy, moist.			AU5	
8	26				AU6	
	30	No groundwater seepage encountered. Bottom of hole at 9.1 metres				

Elevation (m) (ft) Elev. 21.0m (Approx.)



C: Condition of Sample
Good
Disturbed
No Recovery

Type: Type of Sampler
SPT : 2 in. standard
ST : Shelby
G : Grab
AU: Auger Flight

N: Number of Blows
WH : Weight of Hammer
WR : Weight of Rod
Standard Penetration Test : ASTM D1586
Hammer Type: Trip Hammer

DYNAMIC CONE PENETRATION TEST

Plastic Limit (%) Liquid Limit (%)
Moisture Content (%)
Ground Water Level
Shear strength in kPa (Torvane)
PP Pocket Penetrometer (compressive strength in kPa)
Shear strength in kPa (Unconfined)
Shear strength in kPa (Field vane)
Remolded strength in kPa
Percent Passing # 200 sieve

Drill Method: Solid Stem Auger / DCPT
Date Drilled: 10/18/2021
Logged by: LA
Checked by: JC

SOIL CLASSIFICATION IN ACCORDANCE WITH THE CANADIAN FOUNDATION ENGINEERING MANUAL 4TH EDITION 2006.

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Raicon Developments Inc.
34010 - 34074 Maclure Road
Abbotsford, BC

AH21-05

Pg 1 of 1
Project No: GA21-1287-00

Depth (m)	Depth (ft)	Description	C	N	Type/ Sample #	Water Level
Elev. 12.0m (Approx.)						
		Soft, brown, grass-covered, TOPSOIL, moist.				
0 – 2	0 – 6	Loose to compact, brown, SAND and GRAVEL, fine to coarse-grained sand, subrounded gravel, trace silt, moist, fill.			AU1	
					AU2	
2 – 4	6 – 14	Stiff, brown-grey, SILT, some sand to sandy, trace gravel, moist.			AU3	
					AU4	
4 – 8	14 – 26	Dense, brown, SAND and GRAVEL, fine to medium-grained sand, subangular to subrounded gravel, trace silt, moist.			AU5	
					AU6	
8 – 9.1	26 – 30	No groundwater seepage observed. Bottom of hole at 9.1 metres				

10 20 30 40 50 60 70 80 90

Elevation (m) (ft) — Elev. 12.0m (Approx.)
10 38
8 26
6 20
4 14
2 8

C: Condition of Sample
Good
Disturbed
No Recovery

Type: Type of Sampler
SPT : 2 in. standard
ST : Shelby
G : Grab
AU: Auger Flight

N: Number of Blows
WH : Weight of Hammer
WR : Weight of Rod
Standard Penetration Test : ASTM D1586
Hammer Type: Trip Hammer
DYNAMIC CONE PENETRATION TEST

Plastic Limit (%) — Moisture Content (%) — Liquid Limit (%)
Ground Water Level
Shear strength in kPa (Torvane)
PP Pocket Penetrometer (compressive strength in kPa)
Shear strength in kPa (Unconfined)
Shear strength in kPa (Field vane)
Remolded strength in kPa
Percent Passing # 200 sieve

Drill Method: Solid Stem Auger / DCPT
Date Drilled: 10/18/2021
Logged by: LA
Checked by: JC

SOIL CLASSIFICATION IN ACCORDANCE WITH THE CANADIAN FOUNDATION ENGINEERING MANUAL 4TH EDITION 2006.

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200-34425 McConnell Road
Abbotsford, BC V2S 7P1

Raicon Developments Inc.
34010 - 34074 Maclure Road
Abbotsford, BC

AH21-06/DCPT

Project No: GA21-1287-00

Depth (m)	Depth (ft)	Description	C	N	Type/ Sample #	Water Level
		Soft, brown, grass-covered, TOPSOIL, moist.				
	2	Very loose to loose, brown, silty SAND and GRAVEL, fine to coarse-grained sand, subrounded gravel, moist (FILL)			AU1	
	4					
	6					
2		Loose to compact, grey, SAND and GRAVEL, fine to coarse-grained sand, subroudned gravel, trace silt (FILL)			AU2	
	8					
	10	Compact to dense, grey, SAND and GRAVEL, fine to medium-grained sand, subrounded gravel, trace to some silt, moist.				
	12				AU3	
4						
	14					
	16	Dense, grey, SAND and GRAVEL, fine-grained sand, subangular gravel, some silt to silty, moist.				
	18				AU4	
6						
	20	Dense to very dense, grey, SAND and GRAVEL, fine to medium-grained sand, subrounded gravel, trace to some silt, moist.				
	22					
	24				AU5	
8		Auger refusal at 7.6 m. No groundwater seepage observed. Bottom of hole at 7.6 metres				
	26					
	28					
	30					
	32					

10 20 30 40 50 60 70 80 90

Elevation (m)	Elevation (ft)
	70
	68
	66
20	
	64
	62
	60
18	
	58
	56
	54
16	
	52
	50
	48
14	
	46
	44
	42
	40

C: Condition of Sample
Good
Disturbed
No Recovery

Type: Type of Sampler
SPT : 2 in. standard
ST : Shelby
G : Grab
AU: Auger Flight

N: Number of Blows
WH : Weight of Hammer
WR : Weight of Rod
Standard Penetration Test : ASTM D1586
Hammer Type: Trip Hammer

DYNAMIC CONE PENETRATION TEST

Plastic Limit (%) — Liquid Limit (%)
Moisture Content (%)
Ground Water Level
Shear strength in kPa (Torvane)
PP Pocket Penetrometer (compressive strength in kPa)
Shear strength in kPa (Unconfined)
Shear strength in kPa (Field vane)
Remolded strength in kPa
Percent Passing # 200 sieve

Drill Method: Solid Stem Auger / DCPT
Date Drilled: 10/19/2021
Logged by: LA
Checked by: JC

SOIL CLASSIFICATION IN ACCORDANCE WITH THE CANADIAN FOUNDATION ENGINEERING MANUAL 4TH EDITION 2006.

1 LOG PER PAGE 11/6/21

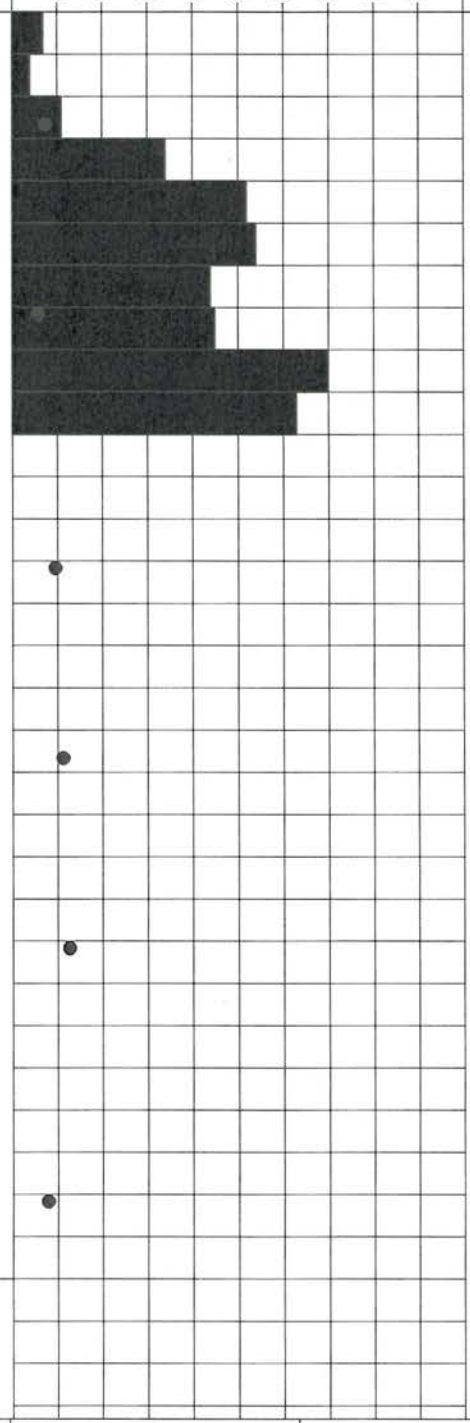
GeoWest Engineering Ltd
200-34425 McConnell Road
Abbotsford, BC V2S 7P1

Raicon Developments Inc.
34010 - 34074 Maclure Road
Abbotsford, BC

AH21-07/DCPT

Project No: GA21-1287-00

Depth (m)	Depth (ft)	Description	C	N	Type/ Sample #	Water Level
Elev. 12.0m (Approx.)						
		Loose to very dense, brown/grey, SAND and GRAVEL, fine to medium-grained sand, subroudned gravel, trace silt, trace organics, moist, fill.			AU1	
		Dense to very dense, brown/grey, SAND and GRAVEL, medium grained sand, subrounded gravel, some cobbles, trace silt, moist.			AU2	
		Dense to very dense, grey, SAND and GRAVEL, medium to coarse-grained sand, subrounded to subangular gravel, trace to some cobbles, trace silt, moist to wet.			AU3	
					AU4	
					AU5	
					AU6	
		Groundwater seepage observed at 3.7 m below grade. Bottom of hole at 9.1 metres				



Elevation (m) (ft) Elev. 12.0m (Approx.)

C: Condition of Sample
Good
Disturbed
No Recovery

Type: Type of Sampler
SPT : 2 in. standard
ST : Shelby
G : Grab
AU: Auger Flight

N: Number of Blows
WH : Weight of Hammer
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DYNAMIC CONE PENETRATION TEST

Plastic Limit (%) — Moisture Content (%) — Liquid Limit (%)
Ground Water Level
Shear strength in kPa (Torvane)
PP Pocket Penetrometer (compressive strength in kPa)
Shear strength in kPa (Unconfined)
Shear strength in kPa (Field vane)
Remolded strength in kPa
Percent Passing # 200 sieve

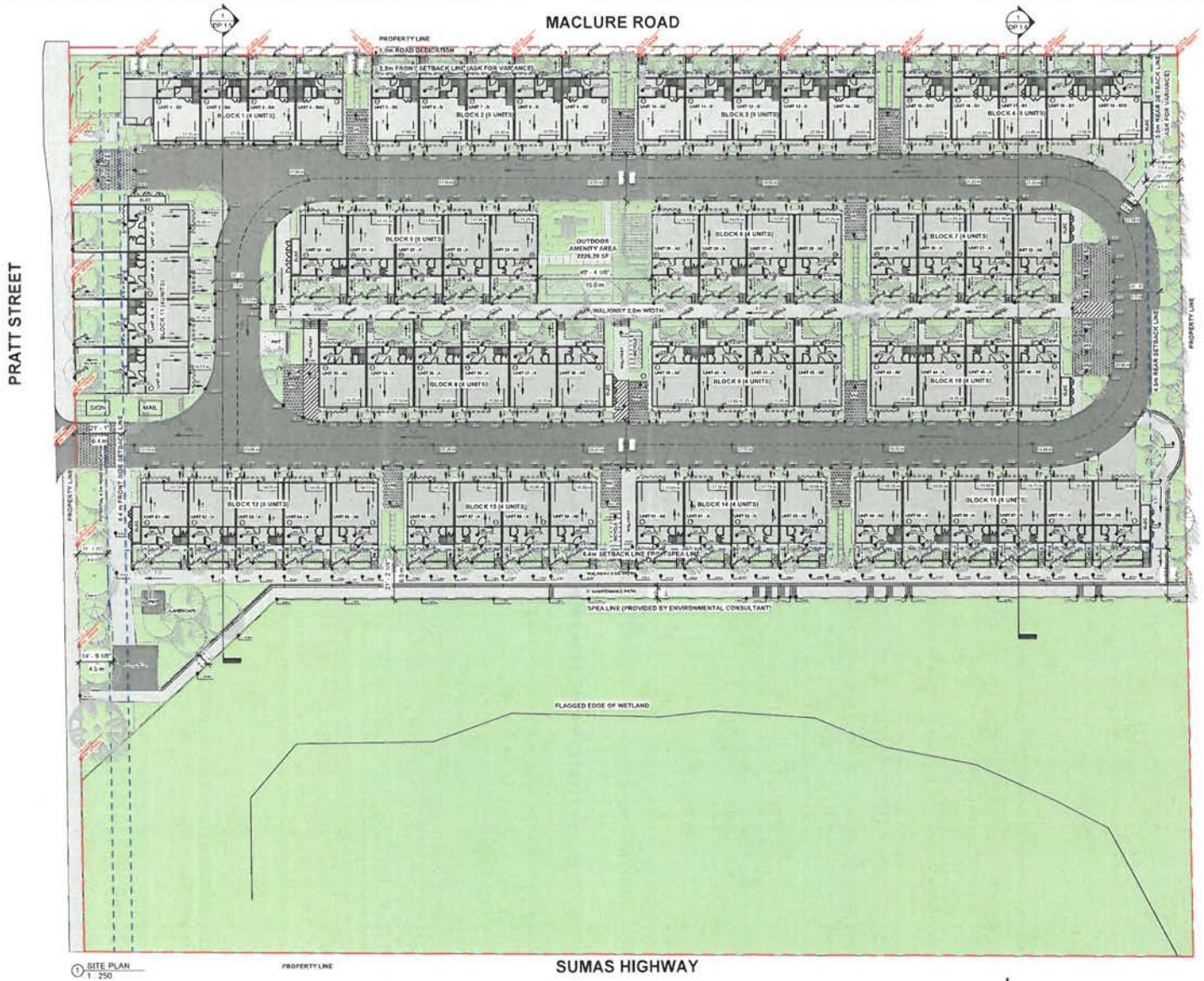
Drill Method: Solid Stem Auger / DCPT
Date Drilled: 10/19/2021
Logged by: LA
Checked by: JC

SOIL CLASSIFICATION IN ACCORDANCE WITH THE CANADIAN FOUNDATION ENGINEERING MANUAL 4TH EDITION 2006.

1 LOG PER PAGE 11/6/21

APPENDIX A

ATELIER PACIFIC ARCHITECTURE SITE PLAN



1 SITE PLAN
1 : 250

PROPOSED 69 UNITS TOWNHOUSE DEVELOPMENT

34010, 34024, 34040, 34056, 34074 Maclure Road, Abbotsford, B.C.

RAICON HOMES

ATELIER PACIFIC ARCHITECTURE INC.

April 13, 2022

DP 1.0

SITE PLAN

APPENDIX B

TOPOGRAPHIC SURVEY

TOPOGRAPHIC SITE PLAN OF LOTS 1 TO 5 EXCEPT: PART ON STATUTORY RIGHT OF WAY PLAN 75994; ALL OF SECTION 22 TOWNSHIP 16 NEW WESTMINSTER DISTRICT PLAN 8992

CIVIC ADDRESSES:
34010, 34014, 34040, 34056, 34074 Maclure Road, Abbotsford
P.I.D. 011-369-841
P.I.D. 011-369-868
P.I.D. 001-833-671
P.I.D. 009-681-566
P.I.D. 001-005-162

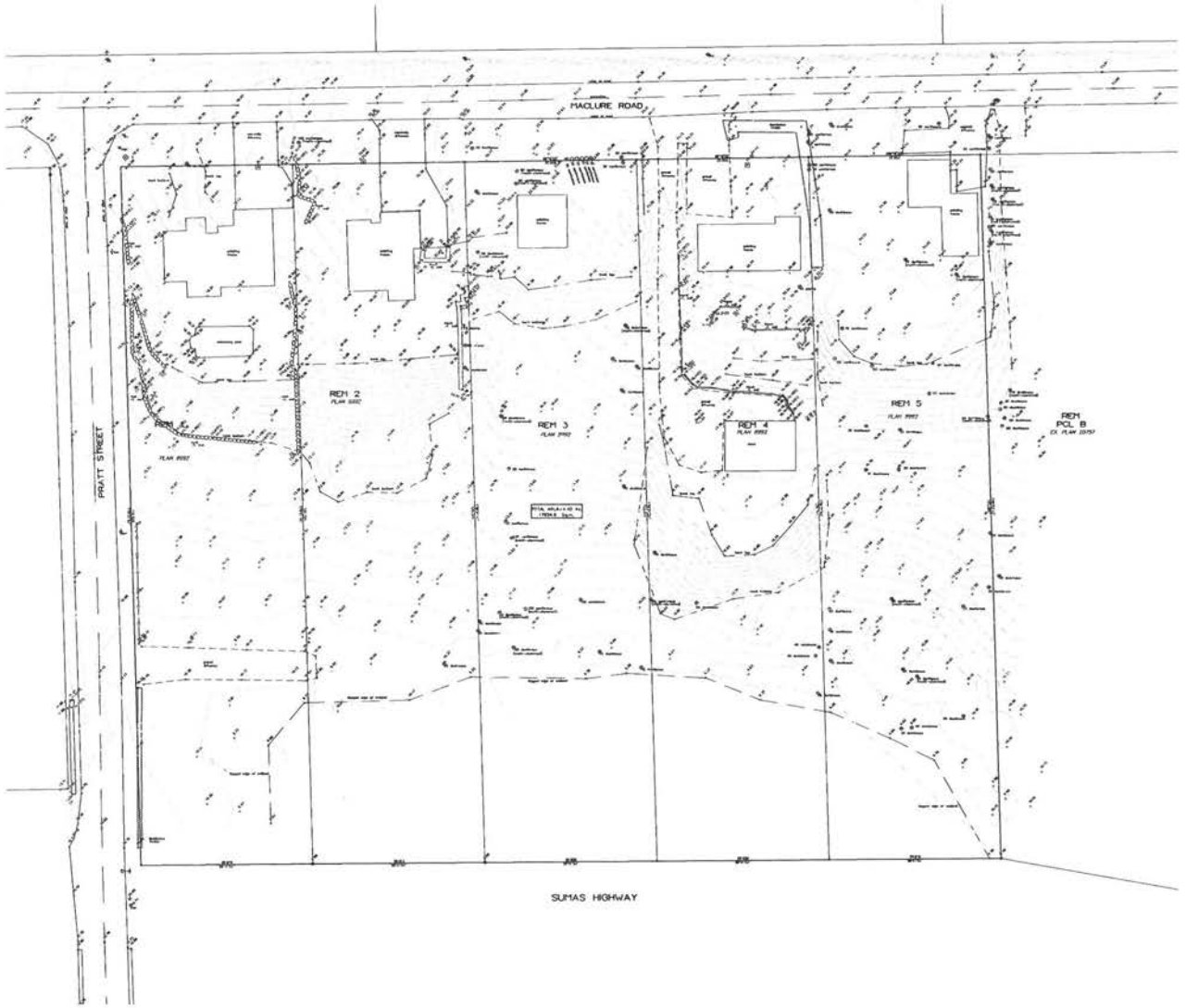
LEGEND

- DENOTES STANDARD IRON POST FOUND
- DENOTES FIRE HYDRANT
- DENOTES CATCH BASIN - TOP ENTRY
- DENOTES CATCH BASIN - SIDE ENTRY
- DENOTES CATCH BASIN - ROUND
- DENOTES UTILITY POLE
- DENOTES UTILITY POLE WITH TRANSFORMER
- DENOTES UTILITY POLE WITH LIGHT
- DENOTES STREET LIGHT - DAVIT
- DENOTES STREET LIGHT - POST TOP
- DENOTES WATER VALVE
- DENOTES UTILITY VAULT
- DENOTES GAS VALVE
- DENOTES SANITARY MANHOLE
- DENOTES STORM MANHOLE
- DENOTES TREE AND CANOPY EXTENT
- DENOTES GROUND ELEVATION
- DENOTES TOP OF RETAINING WALL ELEVATION

SCALE 1 : 375

3.75 0 7.5 15

ALL DISTANCES ARE IN METRES



Lot dimensions are derived from FIELD SURVEY

Elevations are Geodetic (CVD28 CVRD-2013 - IN METERS) Derived from Control Monument 734050 located at the C/L of Maclure Rd. in front of #34024 Elevation = 77.40m

Invert elevations and offsets of services from property lines are derived from municipal records and field survey. Contractor to verify all service locations and inverts prior to construction

Spot elevations along curb are taken in gutter

Tree diameters are taken at 1.4m above grade and are shown in cm

This Plan was prepared for architectural design and permit purposes, and is for the exclusive use of our client. The signatory accepts no responsibility or liability for any damages that may be suffered by a third party as a result of reproduction, transmission or alteration to this document without consent of the signatory.

CERTIFIED CORRECT
DATED THIS 29TH DAY OF APRIL, 2021

Tony Philp, BCLS

www.elevatelandsurveying.com
tony@elevatelandsurveying.com
604-385-3571

ELEVATE LAND SURVEYING
FILE: 21-1235-SITE

Maclure Road

Assembly

Fish Habitat Assessment &

Wildlife Habitat Report

Prepared for:

Raicon
Unit 202, 17610-65A Ave
Surrey, BC
V3S 5N4

Prepared by:

BlueLines Environmental Ltd.
1265 East 29th Ave.
Vancouver, BC
V5V 2T1
phone. 604-790-6845
email. info@bluelinesenviro.ca

June 10, 2022

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Executive Summary

A desktop and field-based assessment has been completed in support of a Natural Environment Development Permit application in relation to a proposed multi-Family development involving 34010, 34024, 34040, 34056, and 34074 Maclure Road, Abbotsford BC.

Environmental resource values requiring explicit consideration are limited to a modified natural stream and wetland complex located at the toe of a natural slope. The aquatic and riparian ecosystem values are located at the immediate toe of slope of a substantial fill associated with Highway 11 (Sumas Way). As a result of the highway alignment the drainage is routed parallel to the north margin of the highway and drain west to a previously unmapped culvert crossing with confirmed connectivity to the Willband Creek system to the southwest.

The subject properties have been historically developed and include single-family residential land uses, agricultural uses, and ancillary uses (e.g. equipment storage) with fill placements and disturbances occurring within the applicable Natural environment Development Permit buffer area.

An evaluation and delineation of the aquatic habitat boundaries has been completed by a Qualified Environmental Professional and surveyed by a BC Land Surveyor to inform the streamside protection and enhancement area (SPEA) setback planning and evaluation of restoration opportunities. The proposed riparian setback boundary has been refined to yield a pragmatic development interface that achieves the minimum riparian protection standard pursuant to the Province of BC's Riparian Areas Protection Regulation (RAPR) and achieves the 2:1 habitat offsetting requirements of policy NE3 pursuant to the City of Abbotsford's Official Community Plan.

A SPEA variance of 1,891m^2 is requested based on historical impacts affecting the bylaw SPEA setback areas, with commitments to a full riparian area restoration and enhancement treatment that will yield a total riparian area of 4,146m^2. Enhancement of the proposed setbacks have been evaluated based on interpretation of historic disturbances and land uses with respect to habitat weighting factors per City of Abbotsford policy and are concluded to provide an offset for the requested SPEA variance equivalent to 4,001m^2.

Senior agency regulatory compliance will require the design and installation of a stormwater outfall under a *Water Sustainability Act*, Water Sustainability Regulation notification. A single stormwater outfall is proposed with two (2) options being evaluated by the civil engineering consultant. The recommended option from an environmental impact mitigation perspective is to connect to the existing modified wetland ecosystem to preclude construction related impacts

yielding the removal of mature trees within the southern riparian buffer zone of the open water wetland that would result from a storm main installation along the southeast corner of the study area with a direct connection to the MOTI drainage ditch and culvert crossing of Hwy 11.

The establishment of the proposed SPEA will include requirements to complete bulk excavation and re-grading of historically placed fill materials within the setbacks. The earthworks and regrading will be coordinated with invasive species removals and replanting with native tree and shrub species. Furthermore, the proposed SPEA will include terrestrial habitat complexing to enhance habitat diversity and functions. The proposed SPEA setback boundaries are confirmed to exceed the Province of BC's riparian protection standards pursuant to RAPR.

No occurrences of noxious weeds were identified through field evaluation of the study area parcels; however, knotweed is confirmed to exist in the immediate vicinity. Site clearing and grading activities will be completed under environmental monitoring supervision, notably within the proposed riparian area setbacks, and any incidental encounters of noxious weeds designated under Schedule A of the Noxious Weeds Regulation will be managed pursuant to best management practices to mitigate the risk of spread or re-growth within the project area.

Table of Contents

List of Tables

List of Figures

1 Introduction

RAICON Homes Ltd. (RAICON) has retained the services of BlueLines Environmental Ltd. to prepare an environmental assessment in support of a proposed multi-family development proposed for the assembly of five (5) single-family properties located on Maclure Road (34010, 34024, 34040, 34056, and 34074) Abbotsford BC (the Property).

The assessment presented herein has been completed by Mr. Ryan Preston, B.Sc, P.Ag, CPESC as a Qualified Environmental Professional (QEP) providing expertise in urban watershed management. The assessments, recommendations, and conclusions presented herein reflect best professional judgement based on the completion of seasonally representative surveys and review of published information from municipal and provincial databases and mapping resources.

The assessment is provided to satisfy requirements for the City of Abbotsford's Fish Habitat Assessment and Wildlife Habitat Assessment reporting requirements in support of a Natural Environment Development Permit (NEDP) application. The field and desktop studies summarize aquatic and riparian resource values requiring consideration for the purposes of establishing streamside protection and enhancement area (SPEA) setbacks pursuant to the City of Abbotsford's streamside protection bylaw no. 1465-2005 and to ensure compliance with the Province of BC's Riparian Areas Protection Regulation (RAPR).

1.1 Summary of Proposed Development

The proposed development will include fifteen (15) building structures yielding 69 dwelling units and associated access and parking surfaces. The proposed multi-family development will include requirements for site grading and civil servicing with drainage connections proposed to discharge to a single point of discharge following onsite detention and water quality treatment.

The development concept plan has been prepared by Atelier Pacific Architecture in consultation with the project's multi-disciplinary team which includes the following:

- Aplin Martin – Civil Engineering;
- BlueLines Environmental Ltd. – Environmental Consultant;
- GeoWest Consultants Ltd. – Geotechnical;
- Elevate Land Surveying – BC Land Surveyors.

The building siting requires the explicit consideration of the aquatic and riparian ecosystem values and a history of anthropogenic fill placements, historic site clearing, and residential yard areas/landscaping. Site grading will require the removal of anthropogenic fills unsuitable for development and construction of civil infrastructure, roadways, and residential structures. Notably, some of the historic fill placements define the surfaces upon which invasive species (e.g. monocultures of *Rubus discolor*) has become established within the streamside protection and enhancement area buffers.

SPEA setback requirements have been assessed based on interpretation of the natural boundary of a modified wetland and consideration of an anthropogenic drainage channel providing connection to a previously unmapped culvert crossing of the Hwy 11 alignment. The evaluation of watercourse origin/typology, assessment of hydroperiod, and potential fish bearing status is presented based on detailed site assessment completed by a Qualified Environmental Professional (QEP).

2 Assessment Methods

BlueLines Environmental Ltd. (BlueLines) was engaged to prepare a detailed assessment and evaluation of aquatic and riparian resource values following completion of a due-diligence phase of study and the subject properties being formally put under contract for purchase.

Field assessments were initiated in June 2021 through October 2021 and reflect analysis of aquatic habitats completed under seasonally representative conditions that reflect a typical 'wet season' hydrologic response. The detailed assessments presented herein were completed by Mr. Ryan Preston, a QEP with expertise and experience in the assessment, classification, and management of aquatic resource values and hillslope hydrologic processes to refine aquatic ecosystem mapping and development of the proposed aquatic and riparian management strategy.

2.1 Desktop Assessments

A pre-field desktop study was completed based on the acquisition of raw light detection and ranging (LiDAR) datasets provided by the City of Abbotsford to support development of a high-resolution digital elevation model (DEM). Desktop analysis included a review of available municipal watercourse mapping and colour aerial imagery to inform field assessments and interpretation of historic land-use changes.

In addition to review of municipal mapping datasets, Provincial mapping and databases were reviewed to assess the Property with respect to the following:

- Province of BC Aquifer Mapping (GWELLS[1])
- Province of BC Groundwater Well Mapping (GWELLS)
- Province of BC 1:50,000 watercourse mapping (iMAP BC[2])
- Province of BC 1:20,000 TRIM watercourse mapping (iMAP BC)
- Province of BC 'Non-Trim' Hydrography mapping (iMAP BC)
- Province of BC Soils Mapping (Soils Information Finder Tool – SIFT[3])

[1] https://apps.nrs.gov.bc.ca/gwells/aquifers?map_centre=49.025897,-122.268923&map_zoom=13

[2] https://maps.gov.bc.ca/ess/hm/imap4m/

[3] https://governmentofbc.maps.arcgis.com/apps/MapSeries/index.html?appid=cc25e43525c5471ca7b13d639bbcd7aa

- Province of BC Habitat Wizard[4] mapping.

2.2 Field Assessments

Field assessments were completed to map and classify all aquatic ecosystem values to support determination of applicable riparian area setback requirements and to identify opportunities for riparian habitat restoration and enhancement.

Field assessments included evaluation of the hydrologic expression of discrete aquatic ecosystems located at the south boundary of the Properties and interpret the local hydro-dynamics driving the hydrology of and connectivity to offsite/downstream aquatic ecosystems.

Incidental observations of historic land uses, fill placements, disturbances, and the presence of noxious weeds was recorded via GPS. An assessment of wildlife habitat potential considering historic land use and ongoing agricultural land uses was completed through reconnaissance level survey as field transects and direct observation within the Properties.

Mapping has been prepared to reflect a refinement of municipal watercourse datasets to reflect present-day site conditions and reflect the LiDAR based topographic model and survey datasets based on a BCLS topographic and legal survey prepared by Elevate Land Surveyors with consideration of topographic and legal surveys completed at the immediately adjoining eastern parcels completed by Onderwater Lands Surveyors in support of a separate development application.

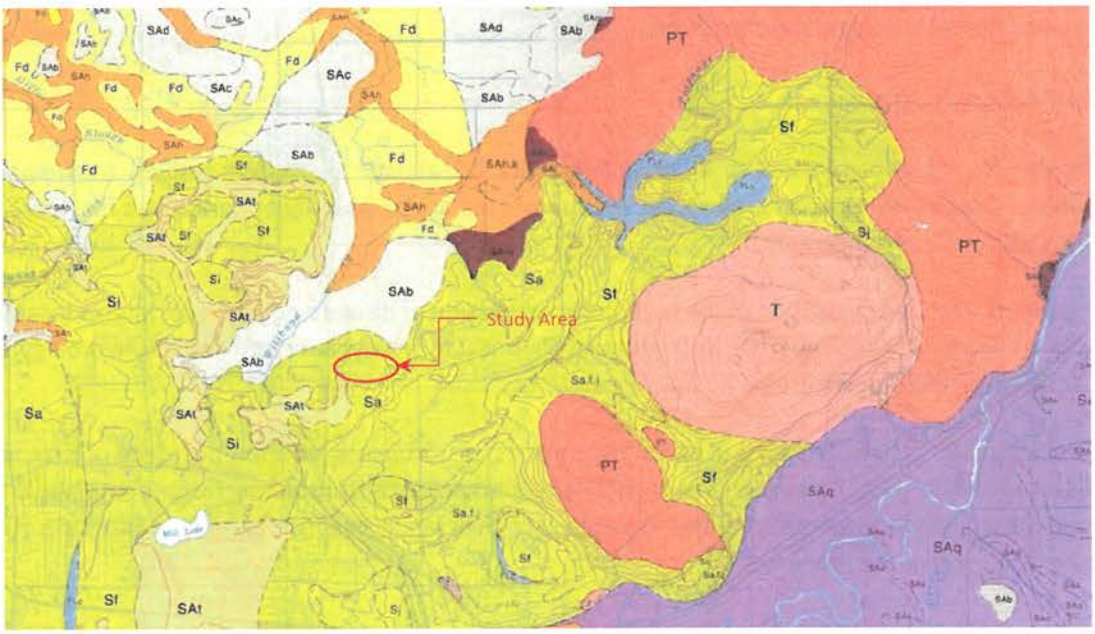
3 Study Area Description

3.1 Quaternary Geology

The Property is located atop a Pleistocene era deposit of Sumas Drift, a recessional glaciofluvial deposit. Geological survey of Canada identifies the underlying geology as an '*Sa*' map unit reflecting recessional channel and floodplain deposits laid down by proglacial streams characterized by gravel and sand up to 40m thick and a normal range of thickness from 5-25m.

The topography of the study area naturally slopes to the south with the lowlands having been historically traversed with the construction of Hwy 11. The topography and geology dictate that the south boundary of the Properties reflects a hydrologic receiving site.

[4] https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/ecosystems/habitatwizard



Inset A - Geological Survey of Canada Map 1485A excerpt illustrating surficial geology of the Study Area.

3.2 Aquifer Mapping

The Quaternary geology of the surrounding landscape is directly related to the local area aquifer mapping. The study area overlies three (3) mapped aquifers:

- Aquifer #28 – a confined sand and gravel deposit consisting of a Fort Langley lithostratigraphic unit
- Aquifer #969 – a sedimentary rock formation of Kitsilano sandstone
- Aquifer #15 – an unconfined sand and gravel aquifer consisting of Sumas Drift.

The proposed development and associated grading will directly interface with the unconfined sand and gravel defining the aquifer substrate of Aquifer #15 with the underlying materials associated with Aquifer #969 and #28 unlikely to be influenced by the proposed development.

The potential interaction with the aquifer will require consideration with respect to site grading and servicing with respect to incidental groundwater interactions and influences on site hydrology.

3.3 Soils Mapping

The Property includes two (2) mapped soil units. Inset B illustrates the location of the soil mapping polygons based on the Province of BC's Soils Information Finder Tool (SIFT) datasets. Generally, the soils mapping reflect pedogenesis atop the underlying parent materials and reflect inherent drainage conditions as dictated by the geologic materials and topography yielding orthic humo-ferric podzols. Soils drainage conditions are characterized as well drained with the parent materials reflecting an eolian deposit atop glaciofluvial sediments.

Inset B illustrates the soils mapping boundaries with respect to the study area boundaries. Table 1 summarizes the soils mapping information.

Inset B - Study area soils mapping boundaries

Table 1 – Maclure Road Assembly Soils Characteristics

Soil Type	Soil Classification	Mode of Deposition	Soil Material	Water Table Present	Drainage	Texture
Abbotsford	Orthic Humo Feric Podzol	Eolian over Glaciofluvial	Mineral	Never	Well-drained	Silt Loam
Marble Hill	Orthic Humo Feric Podzol	Eolian over Glaciofluvial	Mineral	Never	Well-drained	Silt Loam
Laxton	Orthic Humo Feric Podzol	Eolian (mod. Coarse over Coarse)	Mineral	Never	Well-drained	Loam

The resolution of the broad scale soils mapping does not reflect the local site conditions but is reflective of the hydraulic capacity of the soils to facilitate shallow groundwater movement which directly influences the hydrologic expression at the toe of slope associated with Hwy 11 and yields the wetland ecosystems present both north and south from the Hwy 11 fill placements which form a headwater of the Willband Creek system.

3.4 Watercourse Mapping

Provincial watercourse mapping does not illustrate mapped drainage features within the Property. Municipal watercourse mapping illustrates a drainage channel flowing along the immediate north boundary of the toe of fill-slope of Highway 11 and the south boundary of the Properties.

The mapped watercourse is confirmed to drain west along the toe of slope within a channelized watercourse. The watercourse is interpreted to reflect groundwater interaction. Based on the topographic position, the watercourse is interpreted to reflect a historically modified wetland ecosystem.

Municipal drainage mapping datasets show no mapped drainage connections. Inset C illustrates the existing municipal watercourse mapping. Field investigations confirm the presence of a culvert conveying flows below the Highway 11 alignment.

Inset C - City of Abbotsford Watercourse Mapping

4 Aquatic & Riparian Habitat Management Strategy

The subject property is located in a geographically distinct position with the south facing aspect of a natural hillslope dictating a natural receiving site at the toe of slope. The receiving site dynamics have been directly modified by the construction of Highway 11 separating the natural toe of slope from the lowlands to the south and an extensive wetland ecosystem providing headwaters to the Willband Creek system.

4.1 Aquatic Habitat Values

Figure 1 presents the watercourse typology and recommended fisheries resource classification based on field observations and interpretations of hydrologic and geomorphic processes.

Table 2 presents the recommended watercourse classification with respect to fisheries resource values and to inform riparian setback requirements (See Section 4.4).

Table 2 – Fisheries Resource Values: Watercourse Classification

Watercourse ID	Fish Bearing Status	Permanence	Channel Type	Classification
Tributary A	Non Fish Bearing	Permanent	Channelized Stream	Class B
Wetland A	Non-Fish Bearing	Permanent	Wetland	Class B

4.1.1 Tributary A

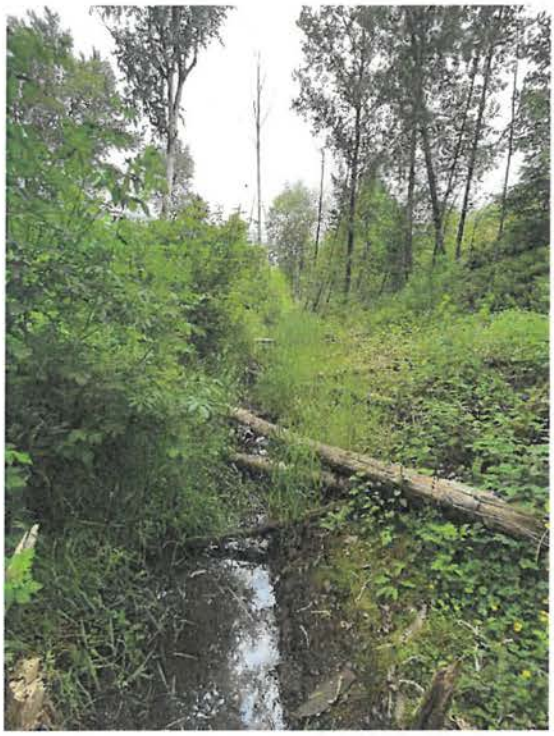
Despite the separation from the natural wetlands to the south, wetland ecosystem values remain in the vicinity of the subject Properties. A distinct shallow open water, marsh, and swamp ecosystem complex is located to the immediate south of the proposed development area in a natural topographic low. The natural topographic low point, a natural receiving site, has been altered through the construction of Hwy 11 which included the excavation of a formal drainage feature to convey runoff to a Ministry of Transportation and Infrastructure (MOTI) culvert crossing of the HWY 11 fill. This watercourse, Tributary A, flows in a westward direction and reflects a modified natural wetland and constructed conveyance for the remaining intact wetland ecosystem. A short segment of the watercourse drains east to the culvert inlet and reflects more of a typical anthropogenic ditch with limited evidence of modification of a natural wetland ecosystem.

Notwithstanding the linearity of the drainage feature, the topography and interpretation of hydrodynamics are concluded to reflect a modified wetland ecosystem rather than a typical 'stream' insofar as typical lotic ecosystem conditions of a headwater stream. The modified wetland has been formally channelized historically, but as a receiving site accumulation of organic materials and a low energy hydrologic regime yields what is recommended for management as a linear swamp with hydrology directly reflecting groundwater expression resulting from lateral subsurface flow emergence at the toe of slope and impounded by the fill materials associated with Highway 11.

Municipal drainage mapping does not illustrate any confirmed surface water connectivity to offsite drainages. Field assessments confirm the presence of a single unmapped corrugated metal pipe culvert. The culvert condition is poor, with evidence of surcharge at the inlet suggesting possible drainage obstruction. The culvert inlet is located within the Ministry of Transportation and Infrastructure (MoTI) highway right-of-way and is not mapped within the City of Abbotsford's drainage datasets. Field assessments confirmed the location of the culvert outlet on the south of the Highway 11 alignment. GIS analysis reveals a culvert length of ~92 linear meters, with the outlet largely submerged at the right bank of a wetland ecosystem adjacent to the boundaries of 3044 Pratt Street.

BlueLines consulted with MoTI representatives and confirmed that the Ministry has no mapping records of the culvert. The culvert condition suggests that drainage improvements may be required to ensure resilience of the future drainage conditions insofar as potential hydrologic changes associated with proposed developments to the north of Highway 11.

The confirmed drainage connectivity via the MoTI culvert confirms the applicability of the City of Abbotsford's streamside protection bylaw.



Photograph 1 - Upstream view of channelized stream located parallel to toe of Hwy 11 fill.

Photograph 2 – Illustration of unmapped CMP culvert crossing of Hwy 11 under low water conditions (June 2021).

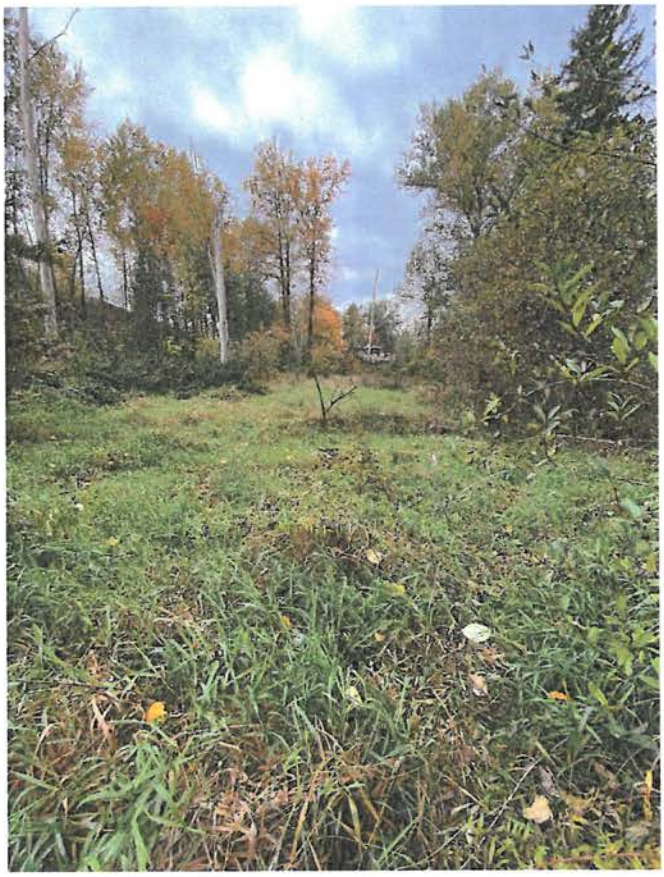
4.1.2 Wetland A

Wetland A is a wetland complex consisting of shallow open water, marsh, and swamp ecosystem types. A formal delineation of the wetland was completed based on field assessment to interpret physical evidence of hydrodynamics, vegetation indicators, and soils.

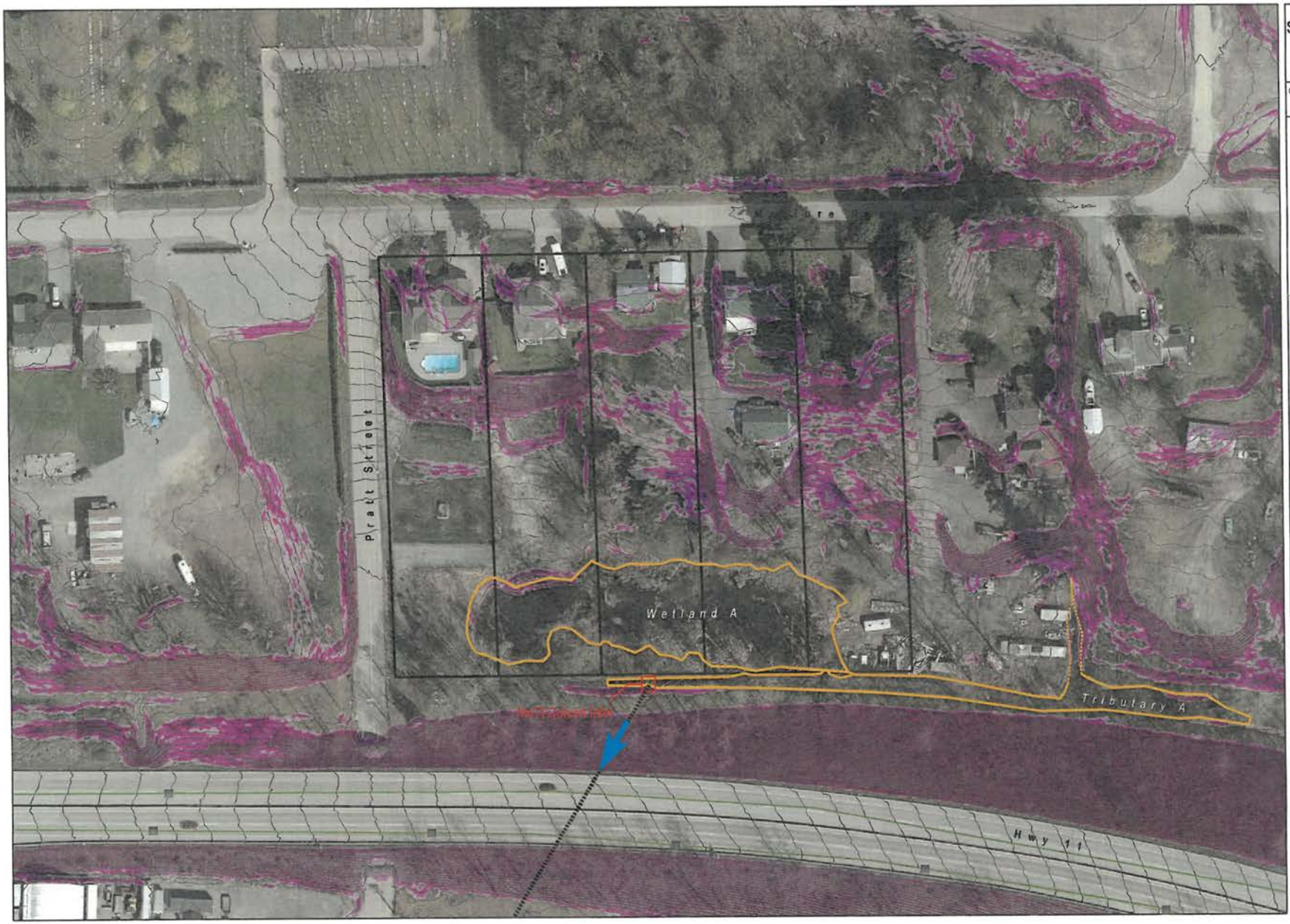
The delineation included the initial flagging of wetland hydrology through interpretation of visible saturation and rafted organics, interpretation of obligate hydrophytes, and micro-topography. The boundary was subsequently refined through soils investigation utilizing a Dutch auger to assess the depth to water table and evidence of redoximorphic conditions or clear evidence of hydric soils properties. A formal wetland boundary was field delineated and surveyed by a BC Land Surveyor. The wetland boundary is located to the immediate south of the proposed development area and will directly influence the riparian setback constraints applicable to the proposed development.

Evidence that the southern portions of 34074 Maclure may have historically included similar palustrine ecosystem conditions includes the relatively flat site topography associated with the clear placement of fill materials and site grading. The flat toe-of-slope surfaces include residual geotextile and geo-grid materials typically included with fill placements atop soft or compressible soils.

The depth to groundwater is evidenced by the nominal grade differential to the channelized stream/modified wetland beyond the south property boundary, and the ditch separating the adjacent east parcel.



Photograph 3 - West view across marsh wetland ecosystem at Wetland A adjacent to proposed development area (October 2021)



Streamside Protection Area Setback Planning

Client: RAICON Homes

RAICON Parcels

Cadastral Boundary

LiDAR Contour (50cm)

Watercourse

Non Fish Habitat

Permanent Non-Fish Bearing

Permanent Non-Fish Bearing - Ditch

Slope Gradient

0 - 20%

20 - 25%

25 - 33%

>33%

Figure 1

Scale - 1:1,000

BlueLines Environmental

Drawing Revisions:

4.2 Riparian Setback Strategy

Based on the proposed watercourse typology and ecosystem classifications summarized above, the Tributary A/Wetland A drainage system will require the establishment of streamside protection and enhancement area (SPEA) setbacks.

Riparian area setback requirements applicable to the proposed development have been evaluated pursuant to Section 4 of the Streamside Protection Bylaw 1465-2005. Generally, 'ditch' streamside protection and enhancement area (SPEA) setbacks will be defined pursuant to the Riparian Areas Protection Regulation (RAPR); however, natural or channelized streams receive setbacks based on the QEP evaluations of stream permanence and fish bearing status.

All study area watercourses located north from the Highway 11 fills and the MoTI culvert are proposed for management as non-fish bearing; however, the groundwater dynamics are concluded to dictate a 'permanent' (e.g. hydrologic expression of streamflow/surface water for periods >6 months). Fish access is concluded to be unlikely and the hydrologic regime would provide low value for fish migration or rearing.

Table 3 summarizes the applicable streamside protection and enhancement areas.

Table 3 – Streamside Protection & Enhancement Area Setback Summary

Watercourse ID	Fish Bearing Status	Watercourse Type	Channel Width (m)	RAPR SPEA (m)	Bylaw SPEA (m)
Tributary A	Non-Fish Bearing	Permanent Channelized Stream	2.64	10	30
Wetland A	Non-Fish Bearing	Wetland	N/A	15m (30m South Shade ZOS)	30

4.2.1 SPEA Setback Variance

The history of site disturbances, notably fill placements associated with historic land use has yielded extensive disturbance within the Bylaw SPEA setbacks. Significant opportunity for restoration and enhancement exists. Furthermore, the removal of historic fill materials is required to support redevelopment in relation to building siting and suitable sub-grade.

Figure 2 presents the Bylaw SPEA setback requirements with interpretation of the historic fill placements and grading disturbances yielding disturbed surfaces, limited mature tree cover, and an understory predominated by a monoculture of invasive species establishment (e.g. Rubus discolor).

The full Bylaw SPEA setback requirements within the Properties includes an area of 6,037m^2.

Streamside Protection Area Setback Planning

Client: Raicon Homes

Legend

- Cadastral Boundary
- Aquatic Boundary
- RAICON Parcels
- Fill Boundary
- LiDAR Contour (50cm)
- Bylaw Setbacks (30m)

Figure 2

N

Scale - 1:1,000

BlueLines Environmental

Drawing Revisions:

A request for SPEA setback variances is proposed with consideration of the restoration and enhancement opportunities to achieve improved riparian habitat function. The proposed setback boundary has been established based on recognition of the mitigation hierarchy and avoidance of the RAPR equivalent setbacks to ensure compliance with or exceedance of the Province of BC's riparian protection standard.

The proposed variance is acknowledged to require formal habitat offsetting to achieve a 2:1 ratio pursuant to the City of Abbotsford's OCP and Natural Environment Development Permit Area guidelines, specifically policies NE2 & NE3:

- **NE2** - No Net Loss. Ensure development results in no net loss of habitat area.
- **NE3** - Habitat Replacement and Restoration. Where loss of habitat is unavoidable, replace the value of lost habitat at a ratio of 2:1.

Pursuant to City of Abbotsford guidance materials for Developing Near Streams and Ravines inclusive of Appendix A, the existing riparian habitat conditions have been assessed to evaluate the relative habitat weighting factors to inform the proposed riparian habitat balance.

Figure 3 presents the proposed riparian area setbacks with classification of the existing vegetation status and ground conditions with respect to historic fill, site grading, and compaction relevant to the classification as impervious or semi-impervious surfaces capable of natural vegetation recruitment.

Table 4 presents the riparian habitat balance with consideration of the historic disturbances and existing site conditions. Table 5 presents the habitat weighting factor evaluation based on existing site conditions.

Table 4 – OCP Natural Environment NE3 Policy Evaluation

Habitat Balance	[A] Bylaw SPEA (m2)	[B] Proposed SPEA (m2)	[C] Variance Area (m2) (A – B)	[D] 2:1 Offsetting Requirement
NE3 Area Calculation	6037	4146	-1891	3782

Table 5 – Habitat Weighting Factor Summary

SPEA Summary	SPEA Setback Area (m2)	Habitat Weighting Factor (m2)	Equivalent Area of Weighted Habitat Gain (m2)
Disturbed/Compacted Fill Area Enhancements	621	2x	1242
Invasive/Unvegetated	2580	1x	2580
Understory Enhancements	358	0.5x	179
		Compensation Equivalence	4001

The proposed SPEA setback boundary with consideration of the habitat weighting factors is concluded to suitably offset the requested variance (1,891m^2) to achieve an area exceeding the 2:1 ratio requirement of Policy NE3. Areas within the proposed setbacks of 3559m^2 is proposed for formal restoration and enhancement. Consideration of habitat weighting factors achieves equivalence of 4001m^2 of additional habitat value yielding a compensation ratio of >2:1.

SPEA Restoration & Enhancement. Habitat Weighting Factor

Client: RAICON Homes

Legend

- Cadastral Boundary
- RAICON Parcels
- Bylaw SPEA (30m)
- Aquatic Boundary
- Site Plan

Habitat Weighting Factor

- 0x (Existing Native Plants)
- 0.5x (Sparse + Invasive Understory - pole sapling)
- 1x (Disturbed Surfaces)
- 2x (Impervious + Engineered Surfaces)

Figure 3

Scale - 1:750

BlueLines Environmental

Drawing Revisions:

The riparian area enhancement areas will be subject to a long-term monitoring program to ensure compliance with maintenance requirements, plant survivorship criteria, and achieve riparian ecosystem function.

The following summarizes the riparian area restoration treatment criteria recommended for application to the south boundary watercourse/wetland ecosystem's riparian buffer zones:

1. Bulk excavation and re-grading of fill materials as prescribed by Geotechnical Engineering Consultant
2. Invasive species treatment/removal;
3. Scarification of final ground surface elevations
4. Augmentation of restoration planting areas with 300-450mm of growing medium (e.g. 3P growing medium per BCLNA standards)
5. Stabilization of exposed ground surfaces with a low-growing reclamation seed mix including shrub and wildflower seed;
6. Terrestrial habitat complexing with Coarse Woody Debris (CWD) features;
7. Installation of boulder cluster features;
8. Installation of nest boxes;
9. Planting of riparian area with native tree, shrub, and groundcover (Max. 1m centers);
10. Installation of formal boundary encroachment fencing;
11. Signage designating no-entry and environmental sensitive area;
12. Commitment to long-term maintenance and survivorship monitoring (5 years);

Pending endorsement of the proposed riparian area management strategy and habitat balance per policy NE3, a detailed restoration planting plan will be prepared and submitted for review and approval by City of Abbotsford planning staff.

Figure 4 presents the proposed SPEA setback boundaries with respect to the development concept.

Proposed SPEA Setbacks

Client: RAICON Homes

Legend

- Cadastral Boundary
- RAICON Parcels
- Site Plan
- RAPR SPEA
- Aquatic Boundary
- Proposed SPEA
- Bylaw SPEA (30m)

Figure 4

Scale - 1:750

BlueLines Environmental

Drawing Revisions:

4.3 Stormwater Management Considerations

The proposed development will include stormwater management measures to address volume reduction, rate control/detention, and water quality considerations. A stormwater management plan has been developed by Aplin Martin. Following onsite detention and treatment, discharge to the existing drainage system is proposed. Consultation with MOTI is underway to review the drainage function of the previously unmapped culvert crossing of the HWY 11 fills.

The proposed stormwater outfall location is under evaluation to assess two options Figure 4:

1. Option 1 – discharge to existing modified wetland and route stormwater via natural existing flow-path to culvert inlet
2. Option 2 – install municipal storm main parallel to Pratt Street and parallel to MOTI toe of fill slope to discharge to the west extent of the Tributary A ditch segment.

BlueLines has recommended detailed evaluation of option 1 to avoid impacts affecting mature trees located along the south margin of the wetland.

5 Wildlife Habitat Values

The subject Properties provide limited wildlife habitat values due to the history of site disturbances including fill placements, grading, and ongoing agricultural operations in addition to habitat fragmentation associated with the construction of Highway 11. Notwithstanding the limited direct habitat values, the riparian setback areas provide significant opportunity for restoration and enhancement to improve intrinsic wildlife habitat values in conjunction with enhancements to riparian area features functions and conditions.

An evaluation of historic species occurrence records was completed pursuant to the City of Abbotsford's wildlife assessment report guidelines[5]. A Query of Provincial datasets available from the BC Conservation Data Centre (CDC) within 2.5km of the study area reveals historic wildlife occurrence records as summarized in Table 6.

Table 6 – Conservation Data Centre spatial query results (2.5km occurrences)

Common Name	Scientific Name	BC Status	Cosewic Status	SARA Schedule
Oregon forestsnail	*Allogona townsendiana*	Red	E	1
Western painted turtle	*Chrysemys picta bellii*	Red	E	1
Mountain beaver	*Aplodontia rufa*	Yellow	SC	1

[5] https://www.abbotsford.ca/sites/default/files/docs/community-events/Wildlife%20Assessment%20Report%20Guidelines.pdf

In addition to the species at risk occurrences, the study area falls within a broad mapping polygon for a masked species at risk occurrence. Information on the masked occurrence has not been pursued through the Conservation Data Centre at this time, but generally corresponds with species occurrences with a fixed geographic location such as rare and endangered plant species or nest/natal site locations (e.g. raptors or bat species).

Field assessments confirm the presence of suitable Oregon forestsnail (OFS) habitat within the relatively undisturbed forested areas associated with the north facing fill-slopes of Highway 11. The headwater origin at the eastern limits of Tributary A includes Bigleaf maple *(Acer macrophyllum)* and Stinging nettle (*Utrica dioica*) with lesser sword fern (*Polystichum munitium*), which is concluded to provide potentially suitable habitat for the gastropods.

Notwithstanding the lack of observation of OFS, the habitat suitability and proximity to documented occurrences will dictate that vegetation clearing and site grading should be completed following comprehensive transect surveys to support salvage and translocation.

5.1.1 Critical Habitat Mapping

The study area includes mapped polygons designating both 'posted' and 'proposed' critical habitat for OFS and Western painted turtle. The critical habitat polygons reflect a GIS based buffer based on the CDC occurrence records and historic aquatic habitat mapping.

No designated or proposed critical habitat mapping polygons are directly associated with the Properties Breeding Bird/Nesting Considerations

Historic site clearing and land uses limit much of the study area's suitability as nesting habitat for migratory birds, nonetheless, seasonal nesting potential will require explicit consideration with respect to site clearing and grading operations to achieve the development objectives.

Any vegetation clearing proposed during the typical nesting season (e.g. March 1 through August 30) will pose a risk of contravention of Section 34 of the BC *Wildlife Act*. Vegetation removals are recommended to be completed outside the typical nesting season. If vegetation removals are required during the typical breeding bird nesting season, comprehensive assessments evaluating direct observations of nesting and breeding bird activity are recommended, with direct environmental monitoring supervision of vegetation removal activities.

6 Invasive Species Occurrences

Occurrences of knotweed species (*Reynoutria sp*). Are confirmed within the immediate vicinity of the Properties along the north margin of Maclure Road (Photograph 5)

No occurrences were identified within the subject properties directly; however, given the proximity to knotweed occurrences, further monitoring of clearing phase activities is recommended to mitigate the risk of spread of noxious weeds subject to regulation under the Weed Control Act.

The offsite occurrences were observed at the entrance road to the cemetery lands to the north, proximal to the onsite knotweed occurrences.

Photograph 4 - Knotweed occurrence observed along north margin of Maclure Road.

7 Summary & Recommendations

The proposed townhome development layout has been developed with the explicit recognition of the value of the modified wetland/stream ecosystem defining the southern property boundaries and consideration of the significant riparian area restoration opportunities.

The proposed streamside protection and enhancement boundary will require endorsement by City of Abbotsford staff and approval by Council. A variance equivalent to 1,891m^2 is requested to achieve the proposed development boundary. Evaluation of existing site conditions has concluded that the proposed scope of restoration and enhancements would achieve equivalence to 4,001m^2 which exceeds the requirements of the Natural Environment DP policy NE3.

The proposed development will require the removal of historic fill placements to address geotechnical requirements for development. Graded fill placements proximal to the aquatic habitats will require formal improvements to scarify compacted surfaces and augment growing medium to support riparian revegetation. Opportunities to complex the proposed riparian restoration areas with terrestrial habitat features benefiting amphibian and small mammal cover elements will be incorporated into the restoration design and plant selections will prioritize species benefiting Oregon Forestsnail based on nearby species occurrences and potentially suitably habitats within the upper limits of the riparian corridor.

Where possible, organic soil horizons associated with the mapped Marble Hill and Abbotsford Soil types are recommended for salvage and re-use within the riparian restoration areas.

Subject to review and endorsement of the watercourse and riparian management strategy by the City of Abbotsford, a detailed riparian area restoration planting plan will be prepared inclusive of encroachment fencing, environmentally sensitive area signage, and a calculation of environmental securities for bonding purposes.

Stormwater management considerations have been incorporated into site design with onsite detention proposed to address rate control and water quality prior to discharge to the receiving environment. The proposed storm outfall location is being reviewed in relation to consultation with MOTI in relation to the evaluation of drainage capacity of the existing culvert crossing of the Highway 11 alignment.

7.1 Senior Agency Regulatory Considerations

The ultimate stormwater outfall installation will require compliance with the *Water Sustainability Act*, Water Sustainability Regulation. A notification pursuant to Section 39 of the Regulation will be required with works completed under environmental monitoring supervision to ensure adherence with instream works standards and best practices.

Site grading requirements will yield a temporary disturbance of riparian areas and poses a potential risk to water quality values in relation to earthworks. A referral to Fisheries and Oceans Canada to summarize the

restoration objectives and present key BMPs and a construction environmental management plan will be required to ensure compliance with fish habitat protection provisions of the federal *Fisheries Act*.

8 Closure

The environmental assessment report and mapping presented herein are provided to support the City of Abbotsford's review and comment on the proposed townhome development application and the formal request for variance with respect to the Streamside Protection Bylaw, 2005 and Natural Environment Development Permit requirements. The proposed aquatic and riparian management strategy reflects the results of detailed field evaluations and interpretations of hydrologic function and ecosystem values completed by a Qualified Environmental Professional.

The interpretations of aquatic habitat and riparian ecosystem values represent professional judgement and interpretation of hydrologic dynamics, ecosystem values, habitat suitability, and analysis of available databases and mapping resources to support the sustainable management of aquatic and riparian resource values.

It is the opinion of the QEP that the proposed development provides an opportunity to achieve meaningful improvements to both aquatic and riparian habitat values that will provide a net gain to ecosystem function.

If there are any questions related to the assessment or recommendations presented herein, please do not hesitate to contact us.

Sincerely,

Ryan Preston, B.Sc, P.Ag, CPESC
Principal | BlueLines Environmental Ltd.

ABBOTSFORD DEVELOPMENT ENGINEERING DIVISION

REVISED REZONING
WORKS AND SERVICES REQUIREMENTS

File No:	PRJ22-107
Planner:	Tahir Ahmed, Planner
Prepared By:	Kim Fleming, Development Technologist II
Approved By:	For Patrick Siemens, Acting Senior Manager, Development Engineering 24/02/21 S.Tour
Date:	February 15, 2024
Applicant:	Jessica Arora, Atelier Pacific Architecture
Development Property:	34010, 34024, 34040, 34056 and 34074 Maclure Road

The Local Government Act authorizes local governments to require development to meet current works and services standards as set out in the City's Development Bylaw and Policies.

This report includes the Works & Services **Requirements** to meet the applicable bylaws and policies and **Future Considerations** that may apply to the next phase of development.

Please have your consulting engineer contact Kim Fleming, Development Technologist II at 604-864-5689 or via email at kflemming@abbotsford.ca in regard to this report and any other servicing matters relating to this application.

REQUIREMENTS

Additional dedications, SRWs, works, features or limits of construction may be needed as identified through the design and construction phases.

Drainage Collection and Disposal

On Maclure Road, along the full frontage of the Lands from the east property line to the west property line and westward to Highway 11, design and construct a storm drainage system to accommodate flow from its catchment area per analysis results. Consult regulatory agencies for discharging flow to watercourses. Coordinate design and construction of the drainage system with adjacent development (PRJ22-037)

Provide detention for runoff from any new roads. Pre-treat runoff from paved surfaces prior to discharging to the proposed detention facilities and City's drainage system.

Prior to any further development on the Lands, provide an updated storm water management plan showing how drainage on the Lands will be accommodated including detention. All storm water works and services including new installations and upgrades to existing offsite systems required by the updated storm water management plan shall be designed and constructed in accordance with said updated storm water management plan.

Portions of the above noted works may be eligible for Latecomer Charges. *(900-9-01)*

Sewage Collection and Disposal

The subject properties are not currently serviced to City sewer. The existing sanitary stub at Hwy 11 and Maclure Rd needs to be extended to service the proposed development. The applicant has two options to obtain servicing:

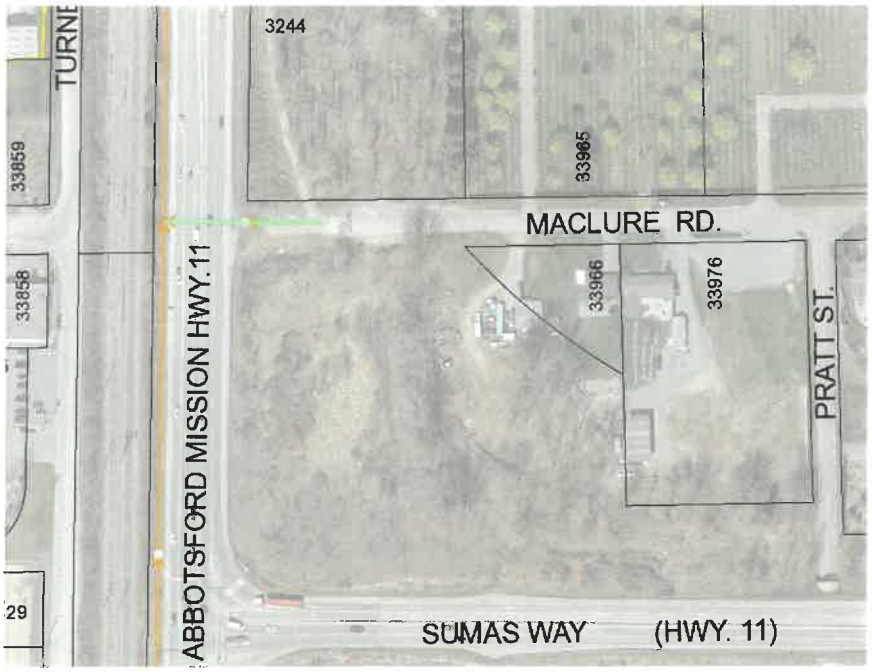
1. Option 1 - Extend the existing 400mm sanitary stub (Asset ID: 161311) and construct a new sewer main along the entire frontage of the proposed development. The stub and the sewer main (Asset ID: 161311, 161312 are shown in the sketch below) that crosses under Hwy 11 shall be CCTV inspected by the applicant and inspection records shall be submitted to Engineering for review and acceptance before connecting the proposed development; or

2. Option 2 - Pay latecomer fees to the applicant of PRJ22-037 (34084, 34098, 34118, 34138, 34144, and 34164 Maclure Rd) for extending the existing sanitary 400mm stub (Asset ID: 161311);

The subject applicant shall find efficiency by working collaboratively with the applicant for PRJ22-037, for servicing. The applicant's consulting engineer shall submit a servicing plan not just for the subject development but also for the entire stretch of properties on Maclure Rd from Hwy 11 to the adjacent development to the east (PRJ22-037).

The applicant shall pay a cash-in-lieu contribution of $15,000 towards the future "Highway 11 and Industrial Ave." trunk sewer upgrade.

Under Option 2, the subject application depends on the neighbouring application to proceed first before the subject application. Option 1 is not dependent on the neighbouring application to proceed.



Portions of the above noted works may be eligible for Latecomer Charges. *(900-9-01)*

Transportation
Below are the requirements from the Engineering Transportation Division for the Proposed Development. The Engineering Division will work with the Developer on any potential modifications to these requirements that meet the overall transportation network goals. Any changes to these requirement shall be approved by the GM, Engineering & Regional Utilities.

Highways – Dedications and Rights-of-Ways
On Pratt Street, a dedication of 4.0m is required along the full frontage of the Lands from the south property line to the north property line.

On Pratt Street, a dedication radius of 15.6m, offset to the east side of Pratt Street is required.

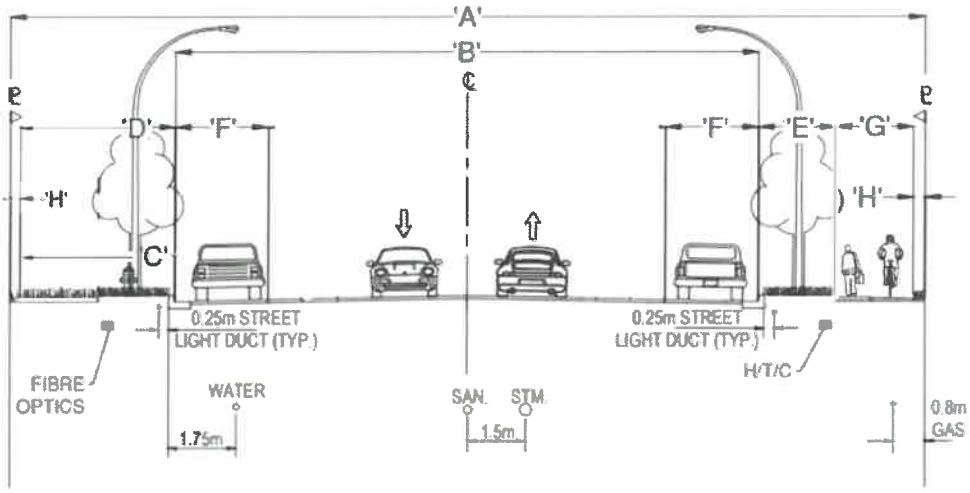
A 3m x 3m corner dedication is required at the corner of Pratt Street and Maclure Road.

Urban Roadways - Construction
On Maclure Road, along the full frontage of the Lands from the east property line to the west property line, construct a full Modified Multi-Family local standard road with Urban Highway design features as per Modified Standard Drawing below, including;

- barrier curb and gutter on the both sides;
- 11.4 m wide asphalt roadway;
- 3.0 m wide Multi-use path on the south side;
- LED street lighting;
- Traffic signage;
- Traffic lane markings;
- soil(s) to support street trees;

- boulevard improvements on the both sides; and
- associated drainage.

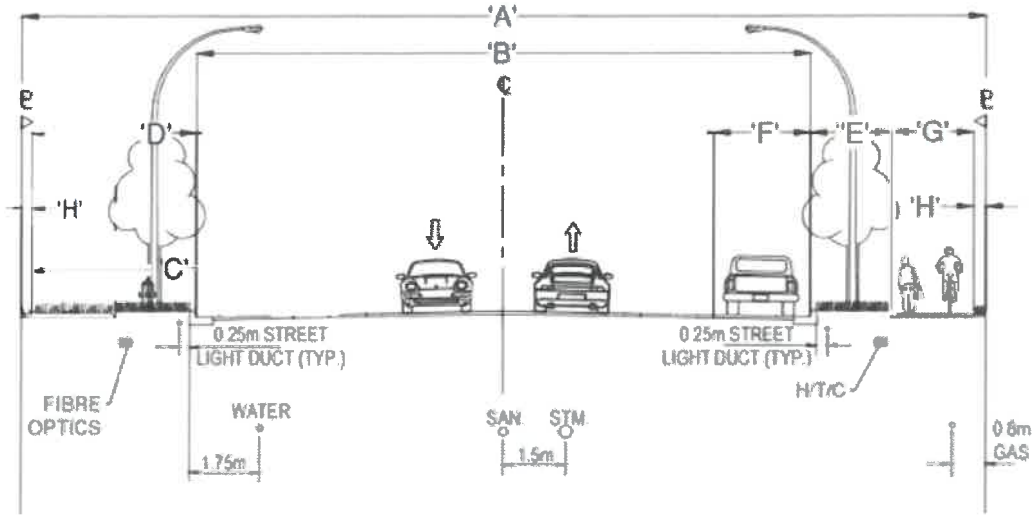
Modified cross-sections for PRJ22-107



ROW TYPES	ROAD ALLOWANCE	PAVEMENT	OFFSET FROM CURB	BLVD (NORTH SIDE)	BLVD (SOUTH SIDE)	PARKING LANE	MUP	BOW TO PL
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'
MACLURE RD: MODIFIED MULTI-FAMILY LOCAL	18.7	11.4	2.2	2.2	1.8	2.2	3.0	0.15

On Pratt Street, along the full frontage of the Lands from the south property line to the north property line, construct a full Modified Multi-Family local standard road with Urban Highway design features as per Modified Standard Drawing below, including;

- barrier curb and gutter on the both sides;
- 11.4 m wide asphalt roadway;
- 3.0 m wide Multi-use path on the east side;
- LED street lighting;
- Traffic signage;
- Traffic lane markings;
- soil(s) to support street trees;
- boulevard improvements on the both sides; and
- associated drainage.



ROW TYPES	ROAD ALLOWANCE	PAVEMENT	OFFSET FROM CURB	BLVD (WESTSIDE)	BLVD (EAST SIDE)	PARKING LANE	MUP	BOW TO PL
	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'
PRATT ST: MODIFIED SINGLE-FAMILY LOCAL	16.0	8.8	2.4	2.4	1.5	2.2	3.0	0.15

On Pratt Street, north of the existing tunnel under Highway 11/Sumas Way, construct a Modified offset cul-de-sac with Urban Highway design features as per drawing provided below.

Provide a row of removable bollards south of the cul-de-sac to restrict vehicular traffic thru the tunnel, so as to allow cyclists only.

PLAN: MODIFIED CUL-DE-SAC

ABBOTSFORD

DWG NO.

Construction is required for a new intersection of Maclure Road and Elmwood Drive to provide access to proposed development. Provide sidewalk connection east of the new intersection to 34320 Elmwood Drive (or nearest bus stop).

From the new intersection of Maclure Road extension and Elmwood Drive to Maclure road, construct a full Modified Multi-Family local standard road with Urban Highway design features as per Modified Standard Drawing below, including;

- barrier curb and gutter on the both sides;
- 11.4 m wide asphalt roadway;
- 3.0 m wide Multi-use path on the south side;
- LED street lighting;
- Traffic signage;
- Traffic lane markings;
- soil(s) to support street trees;
- boulevard improvements on the both sides; and
- associated drainage.

A geotechnical report shall be submitted with any roadway design, confirming the structural adequacy of any existing roadway and/or new roadway being constructed by the Developer.

The above noted works may be eligible for Latecomer Charges. *(900-9-01)*

Access

The possible future closure of the Pratt Street tunnel would result in this development having only a single access in and out. This may be an issue in terms of emergency access and general access. The intersection of Pratt Street and Gladys Avenue is currently a full movement intersection.

Approach MOTI to see if the Pratt Street underpass can be maintained for emergency access and pedestrian and cyclist connection should it be closed to vehicle traffic.

Driveway width to be a maximum of 9.0 meters.

Trail construction

Construct a realigned portion of Discovery Trail shown below in red to the Multi Use Trail Standard CS-TR- 1. Construct the secondary trail in the trees built to a Nature Trail Standard CS-TR-4, per the Development Bylaw. Trails are to be in the general alignment shown on the image below but field fit with Parks Planning and Parks Operations staff prior to construction.
Decommission old trail.

Power/Telecommunications
Service Connection:
Provide underground power and telecommunications services from the distribution system to the property line.

Required Covenants, Easements and Rights-of-way

- Infiltration and/or Detention rights-of-way (PL-201)

Rezoning Development Agreement Preparation Fee
Pay $500 Development Agreement preparation fee.

Works & Services Security & Warranty Deposit
Provide as Security Deposit, the estimated construction cost plus 50% for engineering (min $25,000) and 5% for as-constructed drawings (minimum $15,000) in cash or letter of credit.

Administration & Inspection Fee
Pay 5% of the first $300,000 + 3% of the remainder of the estimated construction cost for administration and inspections.

City Services Fees
Tie-in inspection fee ($50 per inspection) for water, sanitary, and storm sewer services.

Water meters supplied, delivered, and installed by the City's Water Operations Department (per Fees and Charges Bylaw, 2006, Amendment Bylaw No. 32)

Regular Service Meter:
- Up to and including 18mm (3/4") meter *$470.00*

Water and sewer main connections and wet taps are supervised and/or performed by City crews at the developer's expense and payable upon invoice.

Street and traffic signs are supplied and installed by the City at the developer's expense and payable upon invoice.

Latecomer Charges - receivable *Policy 900-9-01*
The Developer is required to submit an acceptable Latecomer Report prior to Latecomer Charges being enacted.

FUTURE CONSIDERATIONS

Upon further development an additional works and services review will apply related to that application. Listed below are some items to consider.

Bylaws

- the applicant is to be familiar with the Development Bylaw to ensure an understanding of possible future Works and services that may impact the development
- the applicant is to review the Works and Services identified in the Development Agreement and how they may impact the building.

Stormwater Management

- detention and infiltration will be required. Ensure that adequate room and proper placement has been reviewed.

Traffic Management

- the increase in vehicle traffic will be reviewed for its impact on the access and nearest intersections. Access may be restricted.
- road dedications, statutory rights-of-way and easements to accommodate the works and lot grading may require adjustments to the placement or size of the building.

Service Connections

- water, sanitary and storm connections may have specific tie in locations. Review and confirm locations prior to design.
- calculations related to the required domestic and fire water demand will be reviewed. There may be a service, meter or flow restrictions.
- Fire Department review may result in geometric changes to onsite roadways, additional fire hydrants, emergency access and building placement.
- Provide underground power and telecommunications services from the distribution system to the proposed building(s).

Development Cost Charges.

- Development Cost Charges are applicable at Building Permit

Lot Grading

- A Lot Grading Plan is required. Final lot grading shall conform to City's Development Bylaw Schedule "I" Lot Grading Standards. Any retaining walls that the Developer or Consulting Engineer consider are necessary to effectively grade the Lands to prevent negative impacts on finished neighbouring Lands, either existing or proposed, shall be constructed by the Developer. The standard "Lot Grading Covenant shall be registered against title to all proposed lots.

- Lot grading shall also provide for the collection of surface runoff and other drainage that will discharge to the City Drainage system. Lot grading may be designed to allow for surface sheet flows or collected in swales and directed to lawn basins as necessary to the satisfaction of the General Manager, Engineering & Regional Utilities. Any collection of surface flows to a concentrated point discharge location shall include provision for

easements or rights-of-way across impacted Lands as necessary. All lot grading shall be designed to take care of surface flows emanating from onsite grading.

Building Permit Submissions

- In order to avoid delays in receipt of building permits, the builder shall be responsible for ensuring that building permit applications on the Lands conform to the intent of the accepted Lot Grading Plan(s) prior to submission to the City.
- The developer or their designate shall review and approve building permit applications prior to submission to the City. When submitted, the building permit plans shall provide lot grading information that shall, at time of final inspection for building occupancy or approval, comply with the accepted Lot Grading Plan or the intent of the lot grading design accepted by the General Manager, Engineering & Regional Utilities prior to construction.

KLIMO & ASSOCIATES

CERTIFIED ARBORIST REPORT

PROJECT LOCATION:
34010, 34024, 34040, 34056 & 34074 Maclure Road, Abbotsford

PREPARED FOR:
Ranjit Rai

PREPARED BY:
Klimo & Associates Ltd.
5565 15B Ave
Delta BC, V4M 2H2

Metro West IMBL **#20020981**
Fraser Valley IMBL **#20020982**

July 29, 2021

Francis Klimo
ISA Certified Arborist
ISA Certified Tree Risk Assessor
BC Wildlife Danger Tree Assessor

1.0 SCOPE OF WORK

Klimo & Associates Ltd. was contracted by Ranjit Rai to conduct a site inspection as part of the preparation of an Arborist report along with a Tree assessment, and Tree management plan in order to support a development permit application for the proposal of a new townhouse project located at 34010, 34024, 34040, 34056 & 34074 Maclure Road, Abbotsford.

The objective of this assessment and report is to identify all on/off-site trees that could be impacted by the development project and to ensure that the management of trees are in compliance with the City of Abbotsford *"Tree Protection Bylaw, 2010" Bylaw No. 1831-2009"* and *"Best Management Practices"*. We conducted our field inspections on July 29, 2021 at around 1:30pm. Our scope of work was to identify all key trees located within the proposed working limits and off-site areas of the development project, assess & document their condition, and recommend measures to protect or remove the subject trees.

1.1 Limits of assignment

- Our investigation is based solely on visual inspection of the trees on July 29, 2021 and the analysis of photos taken and tree diagnosis gathered during the inspection.
- Our inspection was conducted from ground level. We did not conduct soil tests or below grade root examination to assess the condition of the root system of the trees.
- We conducted a level 2 assessment.
- Sunny day, no adverse weather conditions.

1.2 Purpose and use of the report

- Meet municipal criteria for Arborist report submissions and to provide documentation pertaining to the management of on/off-site trees in order to become a supplemental documentation for the proposed development application of a new townhouse project located at 34010, 34024, 34040, 34056 & 34074 Maclure Road, Abbotsford.

2.0 SITE ANALYSIS / PROPOSAL

A development application has been proposed to the City of Abbotsford in order for five (5) individual lots to be consolidated into one (1) development site along with having the site prepared in order to make way for the construction of new townhouses. The subject property was examined to be bounded by residential lots located along its southern and eastern site boundary lines, Pratt St observed to be spanning along the length of the western length, and along with Maclure Road examined to be fronting the property.

The majority of the subject trees were examined to be situated within the limits of the subject property and had consisted of the mature growth of coniferous as well as other deciduous species developing within the south western portion of the property. The remaining areas of the site had consisted of a clear and open landscape along with sections of hedging spanning along the site boundary lines along with other non-bylaw sized trees as well as smaller sized trees populating within the limits of the off-site areas of the site along the southern P/L.

Figure 1 - Location of subject site - 34010, 34024, 34040, 34056 & 34074 Maclure Road, Abbotsford

3.0 TREE ASSESMENT PROCESS

Our tree inspection process is a systematic procedure for accurately identifying and cataloging trees. Using the site survey as a reference to their locations and the proposed site plans provided by the project planners detailing the proposed development, the specifications to our Tree Protection Requirements were able to be accurately completed. In using the information of the proposed construction requirements, we have produced accurate findings to our recommendations to ensure the use of proper tree protection during the construction phase and as applicable, prescribing tree removal recommendations.

Our assessment of the on-site and off-site trees consists of gathering and documenting sizes (*DBH, Height, and Crown spread*), condition, species, location, growth form, and other site factors. The data collected has been documented into the inventory in order to convey the identified trees into a simple format. In addition, accurate tree preservation measures could be implemented for the optimal retention and protection of trees throughout the duration and up to the completion of the development project.

3.1 Health and structure rating

Basic definitions of the general tree health in regards to the documented trees within the report has been separated based upon the total amount of trees broken up into five (5) defined categories as outlined in the table below:

Table 1 - Health and structure rating summary table

Rating	Retention Suitability	Definition	Total Trees
Good	Suitable	A healthy, vigorous tree, reasonably free of disease, with good structure and form typical of the species.	
Fair / Good	Suitable	Tree is growing well for its species. No overt or identifiable significant defects, and is well suited for retention.	
Fair	Marginal	Subject tree that has an average vigour for its species. Small amount of twig dieback, minor structural defects that could be corrected.	
Fair / Poor	Marginal/ Unsuitable	A tree with moderate to poor vigor, moderate twig and small branch dieback, thinning of crown, poor leaf color, moderate structural defects that may affect its survival considering construction impacts.	
Poor	Unsuitable	A tree in decline, epicormics growth, extensive dieback of medium to large branches, significant structural defects that cannot be abated. And a tree in severe decline, dieback of scaffold branches and or trunk, mostly epicormic growth; extensive structural defects that cannot be abated.	

4.0 SUMMARY OF FINDINGS

On July 29, 2021, Klimo & Associates Ltd. had conducted a site visit & visual inspection of all trees located on and off-site. A total of eighty-four (84) trees were identified and had consisted of thirteen (13) different types of species. The identified trees were measured to have an average DBH of 20cm 84cm and overall, the subject trees had ranged from being in fair to good in condition.

All of the identified on-site trees were examined to be situated within the limits of the development area and as such, the subject trees were examined to be in conflict with the overall development project as they had all fallen within the constructions high disturbance requirement areas.

On-site (Development site)	City (Trees on City lot)	Off-site (Privately owned trees)	Total Tree(s)	Total Hedge(s)	
55	16	13	**84**		
55	16		**71**		**Remove**
		13	**13**		**Retain**

Deciduous Tree(s)		Coniferous Tree(s)		Hedge(s)	
Total		**Total**		**Total**	

6.0 ON-SITE TREE INVENTORY

Table 1 - On-site Tree Inventory
Klimo & Associates Ltd.
July 29, 2021
34010, 34024, 34040, 34056 & 34074 Maclure Road, Abbotsford

ID#	Surveyed Y/N	On-site (ON) Off-site (OF) Off-site city (C)	Common name	Botanical name	DBH (cm)	LCR (%)	Canopy (Dia. M)	Condition	Comments	Retention Suitability	Retain / Remove	TPZ (m)
001	Y	On-site	Common holly	*Ilex aquifolium*	13/14/12	70	5	Multi stemmed, small, mature deciduous tree. Enlarged base. Limb attachments from the base. Pruning marks along the lower trunk. Crown development was examined to have been pruned for landscaping. No signs of decay. Subject tree is in fair condition	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
002	Y	On-site	Common hazel	*Corylus avellana*	11/8/10	60	5	Multi stemmed clustered base and overall growth form. The overall growth form was examined to be in contact with overhead utility lines. A phototropic lean towards the road was observed. Subject tree is in fair to poor condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
003	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	50	60	7	Single stemmed growth form. Upper canopy appears to be thinning out. Crown has been suppressed by the growth of adjacent trees. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
004	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	45	50	4	Single stemmed growth form. Due to the lack of sunlight, dead limbs were observed within its lower canopy. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
005	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	90	75	9	Dead tree with a split top. Main structure was examined to be in the advance stages of decay. Tree is in poor condition.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
006	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	150	N/A	N/A	Appears to have been previously topped at around 11m. The growth of new leaders was observed. Suppressed growth form due to adjacent trees. Tree is in fair to poor condition.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
007	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	60	70	3	Single stemmed growth form. Growth of the crown has been influenced by the growth of adjacent trees. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	

008	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	30	75	7	Appears to have been previously topped at around 11m. The growth of new leaders was observed. Suppressed growth form due to adjacent trees. Tree is in fair to poor condition.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
009	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	90	30	5	Co dependant growth form. Appears to have been previously topped at around 11m. The growth of candelabra structured limbs were examined. Suppressed growth form due to adjacent trees. Tree is in fair to poor condition.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
010	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	60	80	10	Co dependant growth form with a single stemmed structure. Suppressed growth of the crown due to the development of adjacent trees. Tree is fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
011	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	35	95	10	Single stemmed growth form. Lower canopy appears to have dead limbs due to the lack of sunlight penetration. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
012	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	30	95	10	Single stemmed growth form. Growth of the crown is suppressed due to the growth of an adjacent Tree. Lower canopy appears to have dead limbs due to the lack of sunlight penetration. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
013	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	30	85	10	Single stemmed growth form. Growth of the crown is suppressed due to the growth of an adjacent Tree. Lower canopy appears to have dead limbs due to the lack of sunlight penetration. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
014	Y	On-site	Colorado spruce	*Picea pungens*	20	75	4	Overall growth form is suppressed due to the sheltering from sunlight. Single stemmed structure. Remaining crown appears to be healthy. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
015	Y	On-site	Red alder	*Alnus rubra*	70	90	11	Multi stemmed structure at around 3m. A crown sweep towards the south was examined due to suppression. A few dead limbs were examined within its crown. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
016	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	65	80	11	Multi stemmed structure at around 2m. A crown sweep towards the south was examined due to suppression. A few dead limbs were examined within its crown. Upper canopy appears to be in decline. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
017	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	70	70	8	Single stemmed structure. The growth of several overextended limbs was examined. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	

018	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	30	35	4	Single stemmed structure. The growth of its crown has been suppressed by the growth of adjacent trees. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
019	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	120	60	6	Single stemmed structure. The growth of its crown has been suppressed by the growth of adjacent trees. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
020	Y	On-site	Western hemlock	*Tsuga heterophylla*	50	N/A	N/A	Subject tree is a dead 10m tall snag. The growth of Ivy was examined to have engulfed its main trunk.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
021	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	60	65	13	Large diameter tree. Main structure was examined to be engulfed in the growth of Ivy. Upper canopy appears to be thinning out. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
022	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	50	45	3	Single stemmed growth form. The growth of the crown is suppressed and sheltered. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
023	Y	On-site	Black cherry	*Prunus serotina*	50	N/A	N/A	Subject tree is dead with a decaying structure. Several stems were examined to have failed.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
024	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	40	50	12	Mature tree with a dominant growth form. The growth of Ivy was examined to be developing along its lower trunk. Lack of lower crown development due to lack of sunlight penetration. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
025	Y	On-site	Western redcedar	*Thuja plicata*	80	N/A	N/A	Subject tree is dead. Co dominant structure with the growth of Ivy developing along is structure.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
026	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	80	45	9	Mature tree with a dominant growth form. Lack of lower crown development due to lack of sunlight penetration. Overall crown appears to be healthy. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
027	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	50	30	6	Growth of the crown appears to be suppressed by the lack of sunlight penetration. Lower canopy is thinning out. Tree is in poor condition.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
028	Y	On-site	Western redcedar	*Thuja plicata*	20	N/A	N/A	Subject tree is dead. Previously developing as part of a ROW with a single stemmed structure.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
029	Y	On-site	Western redcedar	*Thuja plicata*	30	N/A	N/A	Subject tree is dead. Previously developing as part of a ROW with a single stemmed structure.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
030	Y	On-site	Western redcedar	*Thuja plicata*	60	N/A	N/A	Subject tree is dead. Previously developing as part of a ROW with a single stemmed structure.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
031	Y	On-site	Western	*Thuja plicata*	100	N/A	N/A	Subject tree is dead. Previously	Subject tree will be in conflict	Unsuitable	Remove	

			redcedar					developing as part of a ROW with a single stemmed structure.	with the proposed development.			
032	Y	On-site	Silver birch	*Betula pendula*	30	20	5	Multi stemmed base consisting of three main stems. Due to the lack of sunlight penetration, a low live crown ratio has developed. Tree is in fair to poor condition.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
033	Y	On-site	Western redcedar	*Thuja plicata*	100	N/A	N/A	Subject tree is dead. A competing stem had been previously developing along its lower trunk.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
034	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	30	35	10	Single stemmed structure. Tree is developing near other mature trees. Crown appears to have been influenced. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
035	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	120	35	7	Single stemmed structure. Tree is developing near other mature trees. Crown appears to have been influenced. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
036	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	30	75	6	Single stemmed structure. Tree is developing near other mature trees. Crown appears to have been influenced. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
037	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	30	20	4	Single stemmed structure. Tree is developing near other mature trees. Crown appears to have been influenced and the lack of major crown development was observed. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
038	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	35	30	4	Single stemmed structure. Tree is developing near other mature trees. Crown appears to have been influenced and the lack of major crown development was observed. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
039	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	60	40	12	Large mature tree with a dominant growth form with a single stemmed structure. The growth of several overextended limbs was examined within its canopy. Overall crown is healthy. Tree is in fair to good condition.	Subject tree will be in conflict with the proposed development.	Suitable	Remove	
040	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	30	15	3	Single stemmed structure. Tree is developing near other mature trees. Crown appears to have been influenced and the lack of major crown development was observed. Tree is in fair to poor condition.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
041	Y	On-site	Black cherry	*Prunus serotina*	100	15	12	Multi stemmed base consisting of three main stems. Crown has developed a sweep towards the east due to phototropics. Majority of the crown is dead. Tree is in poor condition.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	

042	Y	On-site	Common holly	*Ilex aquifolium*	13/14/12	70	5	Multi stemmed, small, mature deciduous tree. Enlarged base. Limb attachments from the base. Pruning marks along the lower trunk. Crown development was examined to have been pruned for landscaping. No signs of decay. Subject tree is in fair condition	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
043	Y	On-site	Common hazel	*Corylus avellana*	11/8/10	60	5	Multi stemmed clustered base and overall growth form. The overall growth form was examined to be in contact with overhead utility lines. A phototropic lean towards the road was observed. Subject tree is in fair to poor condition.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
044	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	40	40	3	Developing as part of a ROW. Appears to have been previously topped at around 3m. Crown influenced by the growth of adjacent trees. Tree is in fair to poor condition.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
045	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	70	80	5	Developing as part of a ROW. Appears to have been previously topped at around 3m. Crown influenced by the growth of adjacent trees. Tree is in fair to poor condition.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
046	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	80	75	13	Large mature tree with a dominant growth form with a single stemmed structure. The growth of several overextended limbs was examined within its canopy. Overall crown is healthy. Tree is in fair to good condition.	Subject tree will be in conflict with the proposed development.	Suitable	Remove	
047	Y	On-site	American chestnut	*Castanea dentata*	120	80	11	Multi stemmed structure at around 1m was observed. A crown sweep towards the east was examined. Appears to have been previously topped at around 5m. Overall crown is healthy. Tree is in fair to good condition.	Subject tree will be in conflict with the proposed development.	Suitable	Remove	
048	Y	On-site	Western redcedar	*Thuja plicata*	50	N/A	N/A	Subject tree is dead. Previously topped at around 7m and The growth of candelabra structured stems was observed of its previous growth form.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
049	Y	On-site	Bigleaf maple	*Acer macrophyllum*	30	65	12	A basal lean towards the north was examined. Crown and growth form has been influenced by the growth of adjacent trees. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
050	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	40	75	17	Large mature tree with a dominant growth form with a single stemmed structure. The growth of several overextended limbs was examined within its canopy. Overall crown is healthy. Tree is in fair to good condition.	Subject tree will be in conflict with the proposed development.	Suitable	Remove	

051	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	50	75	8	Previously topped at around 8m. The growth of new leaders was examined. Past pruning cuts of its lower crown were examined. Subject Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
052	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	50	75	9	Co dominant structure at around 3m with a poor to moderate structure. Both stems have developed into a single stemmed growth form. A few dead limbs were examined within its crown. Subject tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
053	Y	On-site	Douglas fir	*Pseudotsuga menziesii*	35	70	6	Single stemmed growth form. A slight basal lean and phototropic influenced growth form was observed. Subject tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
054	Y	On-site	Common holly	*Ilex aquifolium*	13/14/ 12	70	5	Multi stemmed, small, mature deciduous tree. Enlarged base. Limb attachments from the base. Pruning marks along the lower trunk. Crown development was examined to have been pruned for landscaping. No signs of decay. Subject tree is in fair condition	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
055	Y	On-site	Common hazel	*Corylus avellana*	11/8/ 10	60	5	Multi stemmed clustered base and overall growth form. The overall growth form was examined to be in contact with overhead utility lines. A phototropic lean towards the road was observed. Subject tree is in fair to poor condition.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
056	Y	City	Western redcedar	*Thuja plicata*	60	75	3	Developed as part of a ROW. Previously topped at around 3m. The growth of new leaders was examined and appears to have been further topped at around 4m. Poor growth form and structure. Subject tree is in fair to poor.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
057	Y	City	Western redcedar	*Thuja plicata*	40	75	3	Developed as part of a ROW. Previously topped at around 3m. The growth of new leaders was examined and appears to have been further topped at around 6m. Poor growth form and structure. Subject tree is in fair to poor.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
058	Y	City	Western redcedar	*Thuja plicata*	30	75	3	Developed as part of a ROW. Previously topped at around 3m. The growth of new leaders was examined and appears to have been further topped at around 6m. Suppressed growth form with a portion of its canopy examined to be dead. Subject tree is in fair to poor.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	

059	Y	City	Norway maple	*Acer platanoides*	25	50	15	Developed as part of a ROW. A large trunk wound around its base as well as multiple failure wounds around its scaffold stems. Southern facing crown has been removed for utility clearance. Asymmetrical growth form and has poor overall structure. Subject tree is in poor condition.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
060	Y	City	Western redcedar	*Thuja plicata*	35	N/A	N/A	Developed as part of a ROW. Previously topped at around 3m. The growth of new leaders was examined. Upper canopy is dead. Remaining crown was examined to be 90% dead. Subject tree is in fair to poor.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
061	Y	City	Western redcedar	*Thuja plicata*	60	75	3	Developed as part of a ROW. Previously topped at around 3m. The growth of new leaders was examined. Poor growth form and structure. Subject tree is in fair to poor.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
062	Y	City	Western redcedar	*Thuja plicata*	30	80	4	Developed as part of a ROW. Previously topped structure. The growth of new leaders were examined and a grow appears to have been re topped. Poor growth form and structure. Subject tree is in fair to poor.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
063	Y	City	Western redcedar	*Thuja plicata*	45	75	4	Developed as part of a ROW. Previously topped structured. The growth of new leaders was examined and appears to have been further topped at around 6m. Poor growth form and structure. Subject tree is in fair to poor.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
064	Y	City	Western redcedar	*Thuja plicata*	40	70	5	Developed as part of a ROW. Previously topped structure for utility clearance. The growth of new leaders was examined. Poor growth form and structure. Subject tree is in fair to poor.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
065	Y	City	Western redcedar	*Thuja plicata*	30	80	7	Developed as part of a ROW. Appears to have been previously topped at around 4m. Overall he growth of new leaders were examined. Southern facing crown has been cleared for utility lines. Upper canopy appears to be thinning out. Subject tree is in fair to poor condition.	Subject tree will be in conflict with the proposed development.	Unsuitable	Remove	
066	Y	City	Bay magnolia	*Magnolia virginiana*	35	60	5	A multi stemmed structure at around 1m was observed. Crown appears to be stressed and thinning out. Slight suppression along its northern portion due to sheltering from adjacent trees was examined. Tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	

067	Y	City	Douglas fir	*Pseudotsuga menziesii*	50	80	14	Mature tree. Southern facing lower crown was examined to have been cleared for clearance. A co dominant structure was observed at around 18m. Crown has developed several overextended limbs. Subject tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
068	Y	City	Japanese maple	*Acer palmatum*	100	70	6	Multi stemmed base. Main structure and crown has developed a slight basal lean towards the west due to suppression from the adjacent Fir tree. Leaves appear to be scorched due to drought. Subject tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
069	Y	City	Douglas fir	*Pseudotsuga menziesii*	25	70	13	Single stemmed growth form. The lack of major crown development towards the north east was examined. A few dead limbs and hangers were observed throughout its crown. Subject tree is in fair condition.	Subject tree will be in conflict with the proposed development.	Marginal	Remove	
070	Y	City	Black cherry	*Prunus serotina*	70	85	5	Multi stemmed base consisting of three main stems. Main crown and structure has developed a lean towards the west. Overall crown is healthy. Tree is in fair to good condition.	Subject tree will be in conflict with the proposed development.	Suitable	Remove	
071	Y	Off-site	Western redcedar	*Thuja plicata*	70	85	9	Good overall growth form and structure. Single stemmed structure. Heavy cone yield was observed within its crown. Its upper canopy was examined to be in stress. Tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure.	Marginal	Retain	
072	Y	Off-site	Pacific dogwood	*Cornus nuttallii*	35	70	10	Co dominant structure with a deep union. Majority of the crown has developed towards the east due to suppression. Tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure.	Marginal	Retain	
073	Y	Off-site	Douglas fir	*Pseudotsuga menziesii*	60	40	6	Single stemmed growth form. Lower Ivy growth was observed along its base. Crown has been slight influenced by the growth of adjacent trees. Tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure.	Marginal	Retain	
074	Y	Off-site	Japanese cherry	*Prunus serrulatum*	18/12	30	6	Single stemmed growth form, small, mature, co-dominant deciduous tree. Limb attachments from the base. Crown development towards the east. Subject tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure.	Marginal	Retain	
075	Y	Off-site	Japanese cherry	*Prunus serrulatum*	39/19	30	6	Single stemmed growth form. Small, mature, co-dominant deciduous tree. Limb attachments at 1.50m. Crown development was observed to be dominant. Die back along the lower crown facing the north. Subject tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure.	Marginal	Retain	

076	Y	Off-site	Douglas fir	*Pseudotsuga menziesii*	40	N/A	N/A	Subject tree is dead. A few select limbs have appeared to have failed in the past. The growth of Ivy and thick ground vegetation was observed.	Place Tree Protection barriers to protect its trunk, roots, and structure.	Marginal	Retain	
077	Y	Off-site	Douglas fir	*Pseudotsuga menziesii*	40	N/A	N/A	Subject tree is dead. A few select limbs have appeared to have failed in the past. The growth of Ivy and thick ground vegetation was observed.	Place Tree Protection barriers to protect its trunk, roots, and structure.	Marginal	Retain	
078	Y	Off-site	Douglas fir	*Pseudotsuga menziesii*	400	N/A	N/A	Subject tree is dead. Main structure was examined to have failed. Entire structure was observed to have been engulfed in the thick growth of Ivy.	Place Tree Protection barriers to protect its trunk, roots, and structure.	Marginal	Retain	
079	Y	Off-site	Douglas fir	*Pseudotsuga menziesii*	120	90	8	Subject tree is developing as part of a ROW. Single stemmed growth form with suppression of its crown towards adjacent trees. Tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure.	Marginal	Retain	
080	Y	Off-site	Black cherry	*Prunus serotina*	70	85	5	Multi stemmed base consisting of three main stems. Main crown and structure has developed a lean towards the west. Overall crown is healthy. Tree is in fair to good condition.	Place Tree Protection barriers to protect its trunk, roots, and structure.	Marginal	Retain	
081	Y	Off-site	Western redcedar	*Thuja plicata*	70	85	9	Good overall growth form and structure. Single stemmed structure. Heavy cone yield was observed within its crown. Its upper canopy was examined to be in stress. Tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure.	Marginal	Retain	
082	Y	Off-site	American chestnut	*Castanea dentata*	120	80	11	Multi stemmed structure at around 1m was observed. A crown sweep towards the east was examined. Appears to have been previously topped at around 5m. Overall crown is healthy. Tree is in fair to good condition.	Place Tree Protection barriers to protect its trunk, roots, and structure.	Marginal	Retain	
083	Y	Off-site	Western redcedar	*Thuja plicata*	50	N/A	N/A	Subject tree is dead. Previously topped at around 7m and The growth of candelabra structured stems was observed of its previous growth form.	Place Tree Protection barriers to protect its trunk, roots, and structure.	Marginal	Retain	
084	Y	Off-site	Douglas fir	*Pseudotsuga menziesii*	40	N/A	N/A	Subject tree is dead. A few select limbs have appeared to have failed in the past. The growth of Ivy and thick ground vegetation was observed.	Place Tree Protection barriers to protect its trunk, roots, and structure.	Marginal	Retain	

7.0 TREE RETENTION / REMOVAL RECOMMENDATIONS

A total of **eight-four (84) trees** have been found within the limits of the development project. Based on the factors that include the pre-existing condition of the subject trees as detailed in the Tree inventory, and the proposed layout, the subject trees are proposed to be treated as follows.

TREE RETENTION

Pursuant to the City of Abbotsford "*Tree Protection Bylaw, 2010*", the following tree(s) are recommended for Retention as detailed in the Tree Inventory and recommendations as noted below. Information regarding specific recommendations can be found below each of the categorized point and further referenced within the attached Tree Management Plan and within the body of the Arborist report.

City & Off-site Tree(s) Selected For Retention,

- For the duration of the construction project, the off-site trees spanning along the length of the western edge of the site has been recommended to be retained throughout the construction process. As the protected trees were examined to be situated near the limits of the proposed construction related works, the subject trees will require the placement of Tree Protection Barriers in order to protect their trunks, roots, and structures.
  The placement of Tree Protection Barriers would be required to be placed along their drip lines or to their specified measurements outlined in Tree Inventory (*TPZ Column*) or the attached Tree Management Plan and left throughout the duration of the construction project.

- **Other Off-site trees & plantings (*Non Bylaw Sized*)**
  As several non-bylaw sized shrubs along with other surrounding plantings populating along the lengths of the western, eastern, and southern site boundary lines were examined to be of non-by-law sized, it is the builder/homeowner's responsibility to ensure that the development does not adversely affect any of the retained shrubs or any other off-site plantings. To avoid a future civil matter, the off-site shrubs as well as the other non-bylaw sized plantings have been recommended to be respected and have measures to protect them throughout the construction process.

TREE REMOVAL

Pursuant to the City of Abbotsford *"Tree Protection Bylaw, 2010"*, the following tree(s) are recommended for removal as per the following sections or as detailed in the report.

Proposed Development Conflicts,

- **On-site trees #001, #002, #003, #004, #005, #006, #007, #008, #009, #010, #011, #012, #013, #014, #015, #016, #017, #018, #019, #020, #021, #022, #023, #024, #025, #026, #027, #028, #029, #030, #031, #032, #033, #034, #035, #036, #037, #038, #039, #040, #041, #042, #043, #044, #045, #046, #047, #048, #049, #050, #051, #052, #053, #054, and #055** will be in direct conflict with the proposed development as the subject trees would fall towards the edge of the proposed building footprint and would be in direct conflict with its excavation & construction requirements occurring along the perimeter of the new buildings. The subject trees would fall within an area of high disturbance requirements related to the development project that would result in root loss & stability impacts.

    - **Removal of on-site non-bylaw sized trees**
      Several on-site plantings & non bylaw sized trees located within the limits of the site has been recommended for removal due to conflicts with the site access and of the proposed development. In combing their stems, none of the individual trees or mature shrubs had been identified to be "protected" as categorized in the City of Abbotsford Tree Bylaw.

- **Other construction related conflicts,**
  Several other on-site trees will be in direct conflict with the proposed development as the subject trees would either fall within the footprints of the proposed building envelopes or would be in direct conflict with the site preparation & grading requirements along with other site servicing requirements occurring within the limits of the site. The subject trees would fall within an area of high disturbance requirements related to the development project that would result in root loss & stability impacts.

- **Boulevard & lane construction requirement conflicts**
  City trees #056, #057, #058, #059, #060, #061, #062, #063, #064, #065, #066, #067, #068, #069, and #070 will be in direct conflict with the proposed subdivision as the subject trees would fall within the grading works of the proposed lane, boulevard works, and of other subdivision related activities such as the site servicing requirements occurring along the perimeter of the site. The subject trees fall within an area of high disturbance requirements related to the subdivision project that would result in root loss & stability impacts.

    - ***As the subject trees as numbered above are situated on the city's property, the City of Surrey's (Parks) authorization will be required for their removal.***

9.0 TREE PROTECTION BARRIER

Tree Protection Barrier Summary		
Tree number (species)	DBH(cm)	Minimum tree protection barrier Radial span (m)

All trees identified above will require tree protection barriers to protect and prevent the tree trunk, branches and roots being damaged by any construction activities/operations. Prior to any construction activity on site, tree protection fences must be constructed at the specified distance from the tree trunks. The protection barrier or temporary fencing must be at least 1.2 m in height and constructed of 2 by 4 lumber with orange plastic mesh screening. Structure must be sturdy with vertical posts driven firmly into the ground. This must be constructed prior to excavation or construction and remain intact throughout the entire period of construction. Further standards for fencing construction can be found at: City of Abbotsford "*Tree Protection Bylaw, 2010*"

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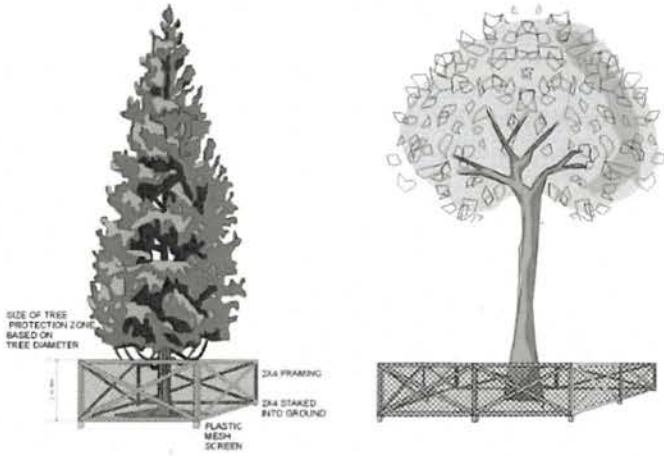

10.0 TREE REPLACEMENT PLAN

Outlined in the City of Abbotsford *"Tree Protection Bylaw, 2010" Bylaw No. 1831-2009"*, as a condition of obtaining a tree cutting permit under this Bylaw, other than for pruning pursuant to a tree cutting permit, the permit holder must plant and maintain on each parcel from which a tree is cut or damaged, replacement trees in number specified in Section 8 (2) and of the species, size and condition described in Schedule "C". The number of replacement trees to be planted and maintained by the permit holder or property owner shall be as follows:

On-Site Trees	**Number of Trees**
Protected Trees Identified	
Protected Trees to be Removed	
Protected Trees to be Retained	
City Trees	
Protected Trees Identified	
Protected Trees to be Removed	
Protected Trees to be Retained	
Total Replacement Trees Required: Trees Requiring **2 to 1** Replacement Ratio (*DBH of 20cm - 30cm*) X two (2) = Trees Requiring **3 to 1** Replacement Ratio (*DBH of more than 30cm*) X three (3) =	
Total Replacement Trees required	
Replacement Trees Proposed	
Replacement Trees for Cash in leu	

Tree Replacement Species		
Planting(s) should be scheduled for the late winter/ early spring or early fall		
Quantity	Name	Species
TBD	TBD	TBD

Please see map for location Note: Planting cannot be within 3 meters of another significant tree

General Tree Planting Methodology

Replacement trees must meet plant condition and structure requirements as stated in "BC Landscape Standard" of the BCSLA/BCLNA and "Canadian Standards for Nursery Stock" of the CNTA. Also, the Replacement trees must be planted and maintained according to the requirements as stated in the "BC Landscape Standard" of the BCSLA.

It is important to locate your new plantings in accordance with the species' growing habits or tendencies. It is crucial to avoid planting your trees alongside buildings in which root ingress into drainage systems can occur and this can result in costly remedial work, also it is good practice not to plant your tall growing trees under power lines or utility lines as this can lead to pruning that may grossly adulterate the overall form or shape of the tree. Planting trees in the right location is the key to sustaining a balanced urban forest.

The proposed replacement Trees are to be a minimum size of 6cm caliper if deciduous, which is measured at 15 cm above the ground, or 3 m tall if coniferous at the time of planting (*trunk width measured at 15 centimetres above the ground*) At least 1.0 metre away from any site boundary line, at least 3.0 metres away from any principle building or any accessory building or any other structure on or adjacent to the site that may adversely affect the tree and; at least 2.5 metres away from any other tree on or adjacent to the site including driveway or any other hardscape or underground service/utility lines.

11.0 CONCLUSIONS

Based on our findings, total eight-four (84) trees have been identified on/off-site. A total of eleven (11) on/off-site trees and three (3) on-site hedges have been recommended for removal due to conflicts with the proposed development as the subject trees and hedges had fallen within its high disturbance requirements occurring within the limits of the site.

A total of fifteen (15) off-site trees have been recommended for retention along with having the requirement of erecting Tree Protection Barriers due to their close proximity towards the proposed construction working limits. Also, in order to ensure the off-site trees and of their protection, Trigger points have been identified on the Tree Management Plan requiring Arborist supervision when working inside of their TPZ(s) during a few of the construction milestones.

Thank you for choosing Klimo & Associates Ltd. Any further questions can be forwarded to Francis Klimo at (604)358-5562 or by email at klimofrancis@gmail.com

Regards,

Francis Klimo

ISA Certified Arborist #PN-8149A

ISA Certified Tree Risk Assessor (TRAQ)

BC Wildlife Danger Tree Assessor #7193