



6.0 PROJECT OVERVIEW

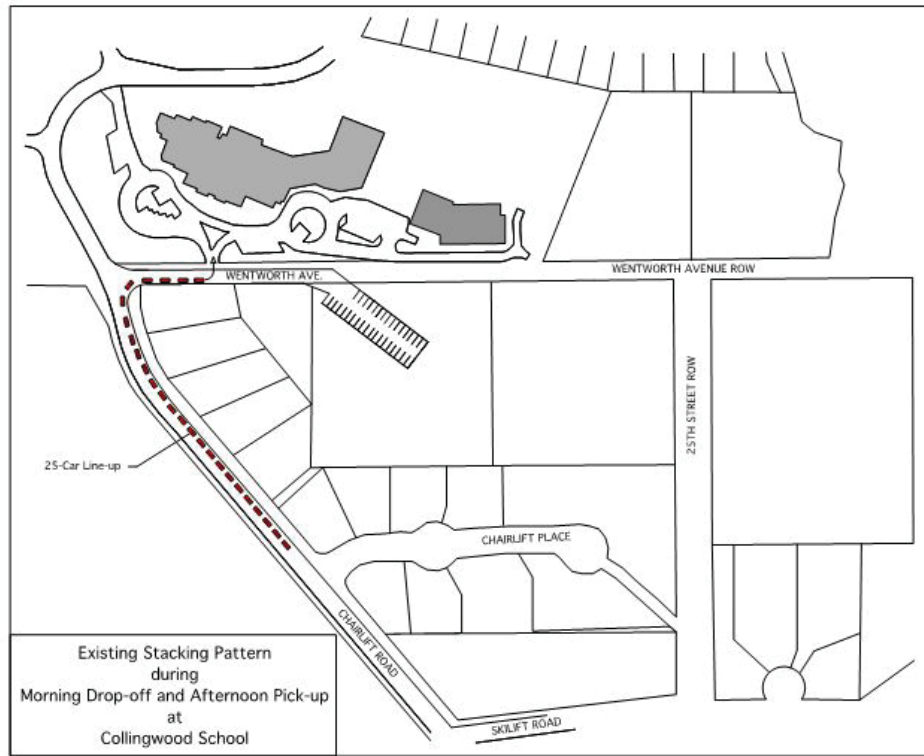


Figure 16 Showing average peak traffic build-up during drop-off and pick-up

6.1 GENERAL

In initial discussions with the District of West Vancouver's Planning staff in 2015, it was explained by staff that due to the current traffic congestion along Chairlift Road during the student drop-off and pick-up times at Collingwood School (Figure 16), obtaining approval for subdivision would be challenging.

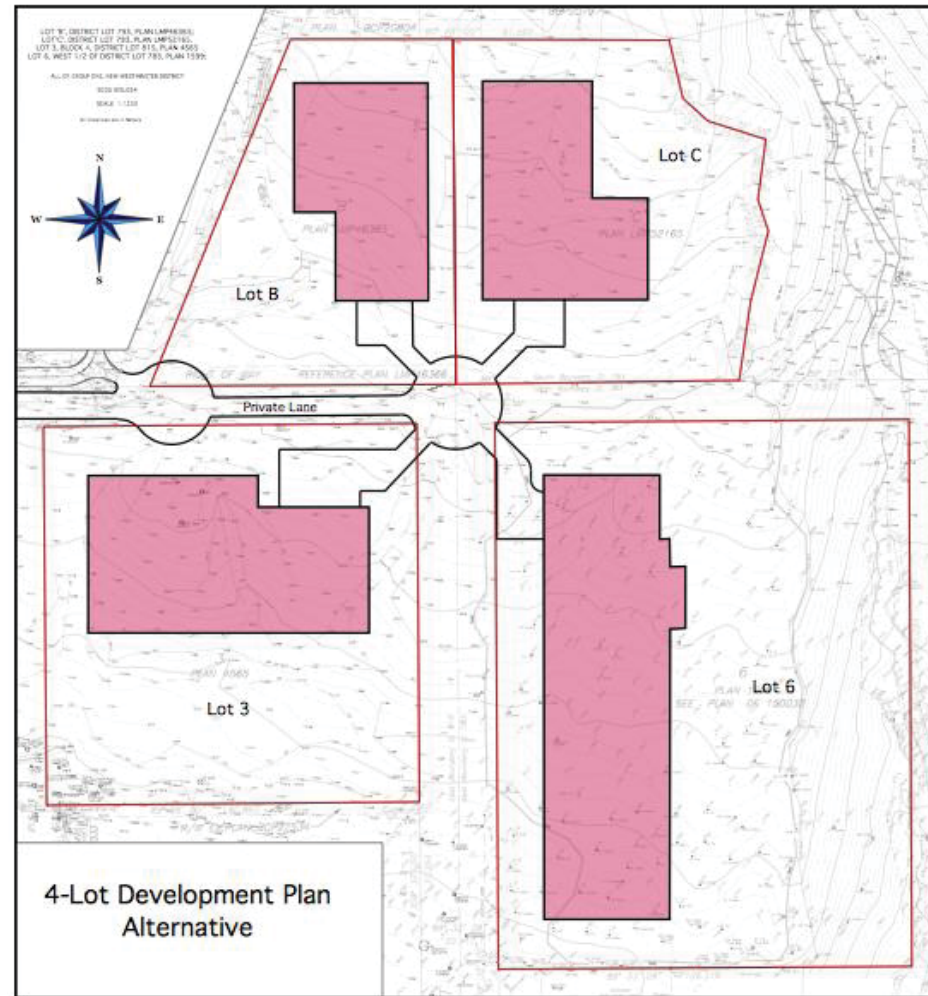


Figure 17 Plan showing Development Allowable For Existing Lots

Staff advised that they would not prevent development on the proponent's site but explained that unless there was a way of not adding to the current congestion, development would have to be restricted to 4 residences, a single family residence on each of the 4 existing lots. This scenario was considered by the proponent and is shown in Figure 17.

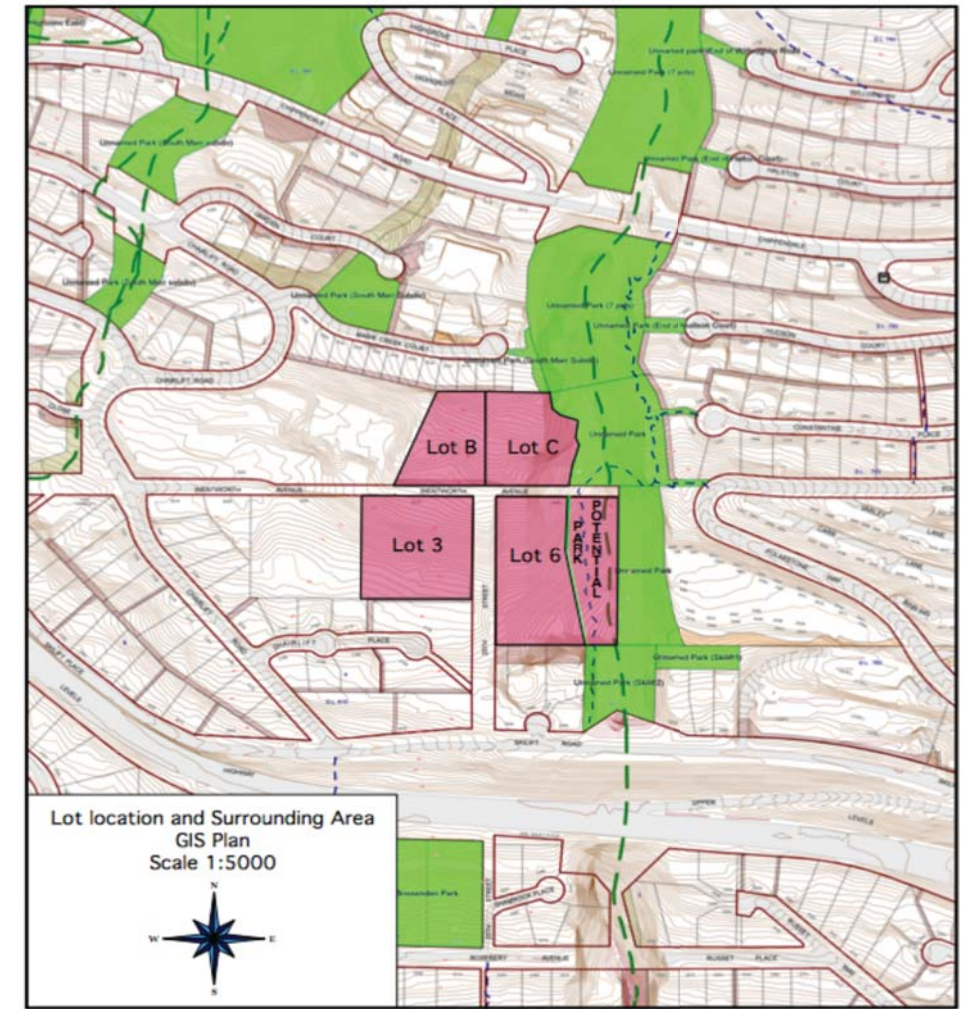


Figure 18 Plan Showing Existing and Potential Park Area Along Mar Creek

The disadvantages of such a plan, aside from the obvious sizes of the houses that would be allowable under the current zoning (20,000 to 50,000 square feet), would be that the land and trail in the Marr Creek ravine would remain under private ownership along the length of lot 6. (Figure 18)

In addition, retaining the current 4-lot configuration is not in line with current community concerns regarding large homes and acceptable neighbourhood character aspirations. It also does not provide for the highest and best use of the subject property and misses an opportunity to provide a continuous public park along the western side of Marr Creek.

6.2 ZONING APPROACH

The Preferred Plan complies with the existing RS-7 zoning designation of the site.

The area of each lot to be created has been sized to be greater than or equal to the minimum 812 square meters required by the RS-7 zoning. As well, the width of each lot meets or exceeds the minimum width of 15.9 meters (18.2 meters for flanking lots) called for under zoning.

It is proposed that the positions of the existing road allowances be shifted and their widths be adjusted to allow new the roads to better mesh with the contours of the lot. After reconfiguration of the road allowances, there would be a net increase in the total area of the road allowances (an additional area of 5679 sqm square meters). A plan indicating the road allowance area to be created is shown in Appendix 2.

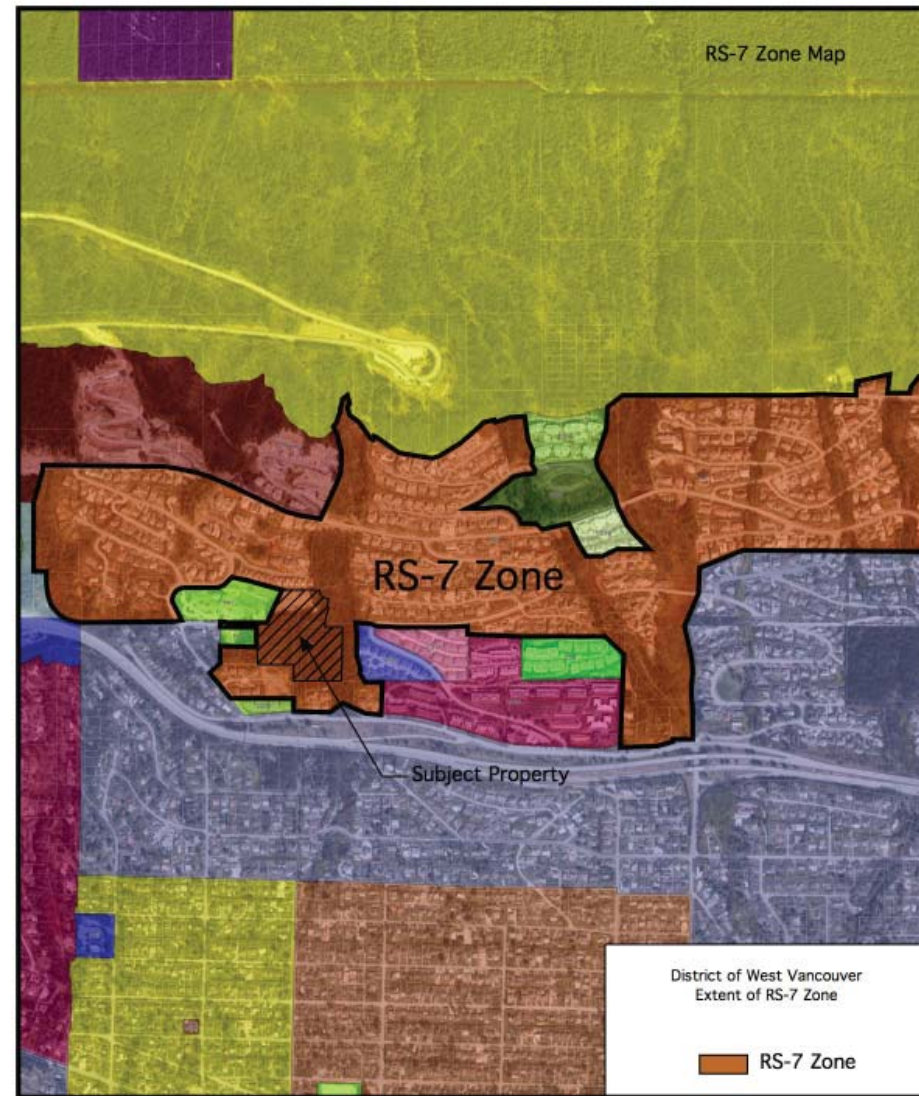


Figure 21 The current number of dwellings/lots in the RS-7 zone is 424 (see Figures 22 & 23).

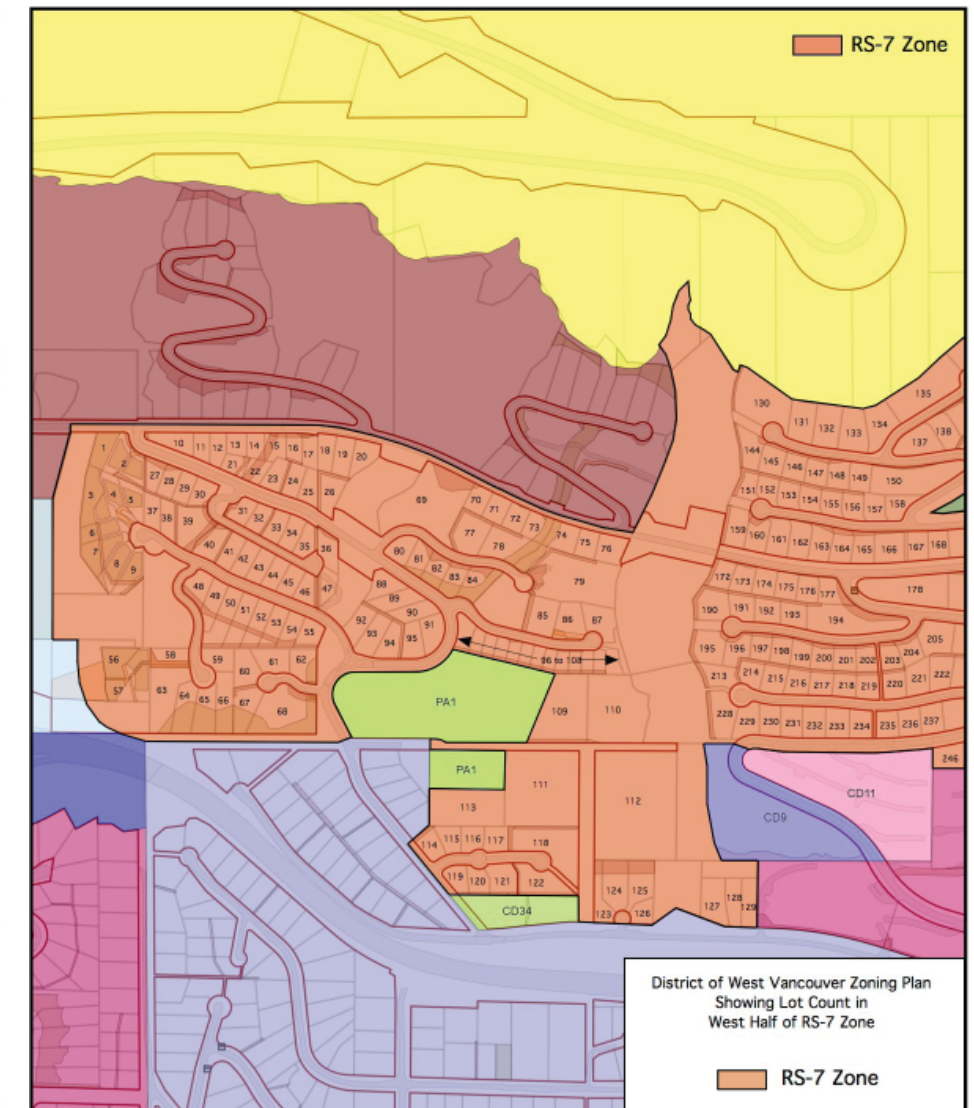


Figure 22.1 West Half of RS-7 Zone
The subject lots are the larger lots numbered 109, 110, 111 & 112 above.

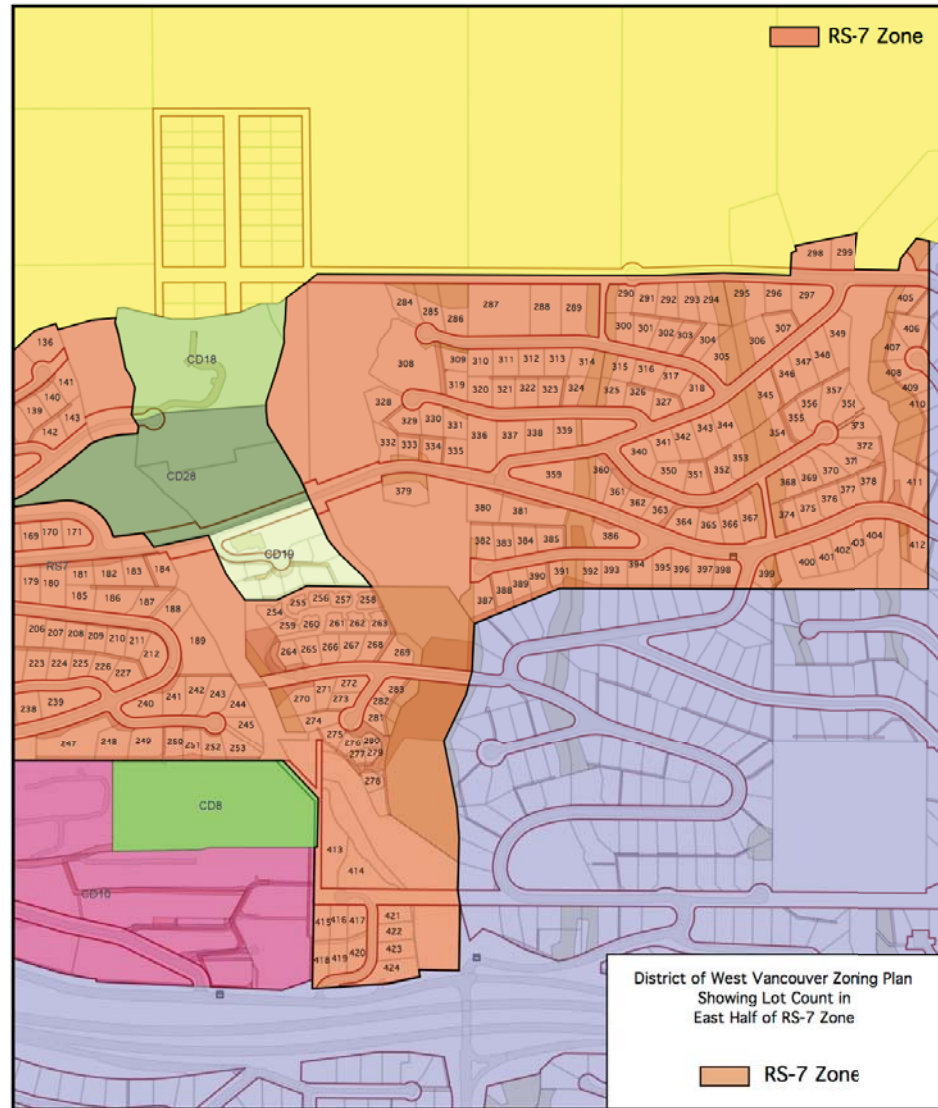


Figure 22.2 East Half of RS-7 Zone

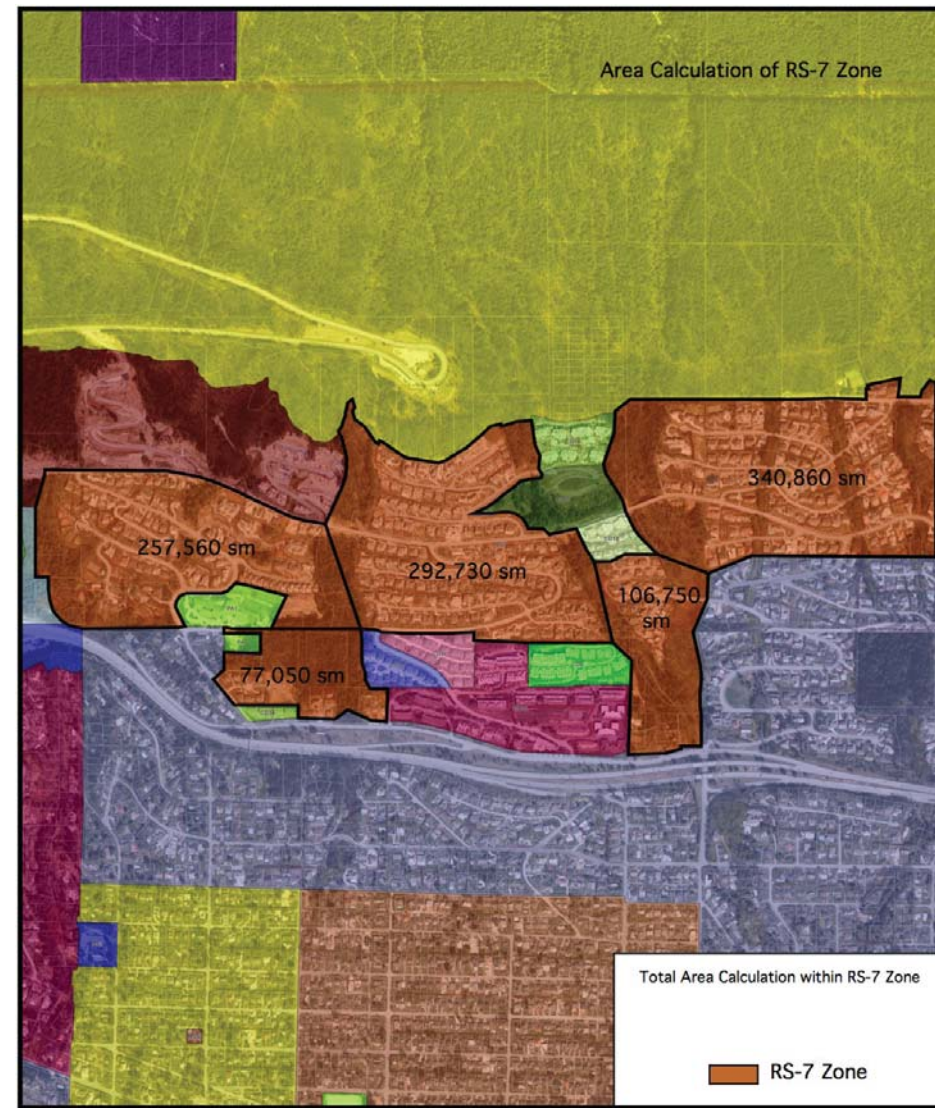


Figure 23 Showing Total Area of RS-7 Zone of 107.5 hectares
The 424 lots/dwellings are spread over 107.5 hectares (Figure 18) yielding an overall density of 1.58 dwellings per 0.4 hectares.

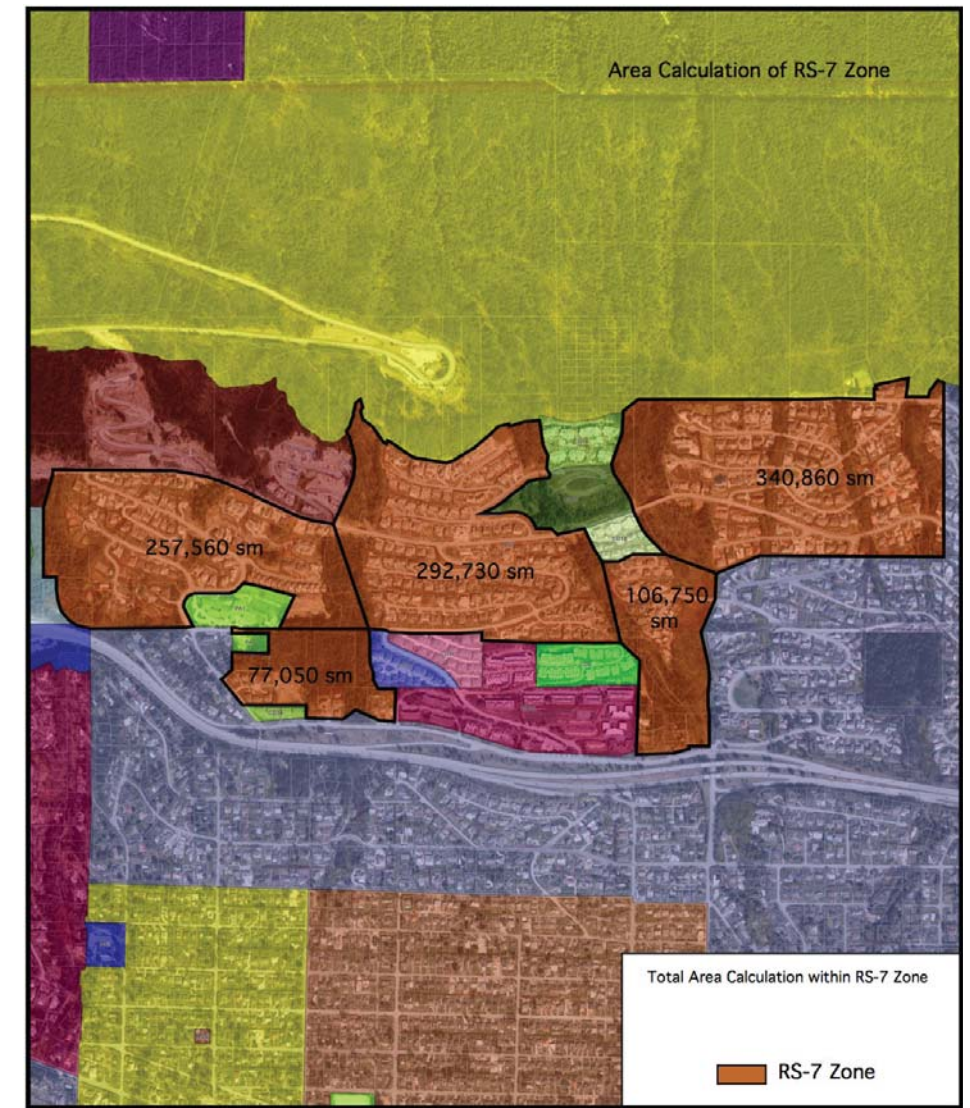


Figure 24 Area of Ravines in RS-7 Zone of 30.4 hectares

6.3 DEVELOPMENT PERMIT APPROACH

The subject lands are located in the Upper Lands area of West Vancouver. The Upper Lands area is designated as a Development Approval Information Area and as such proposed subdivisions in this area require a Development Permit. The following addresses each of the issues set out in the District of West Vancouver's OCP that are to be considered under the Development Permit Guidelines.

6.3.1. Difficult Terrain

“Establish siting and area variations to reduce impact on terrain by reducing site coverage of development for land with slopes greater than 35%.”

6.3.1.1 GENERAL

Aside from the ravine, where no development is to take place, the land slopes at a consistent 20% grade from the top of the property immediately south of Marr Creek Court to the bottom of the property at its south extremity. Comprised of alluvial till, the surface of the land is generally smooth with only subtle undulations. The till can be readily excavated without the need for blasting allowing homes to be properly and carefully sited and recessed into the hillside. Homes will be located to mesh in with the 20% slope in so far as possible. Roofs will be low in profile to allow for maximum views, reduce their visual impact as relatively viewed from areas outside the subdivision and to blend in with the natural lines of the terrain. The area to be developed has no steep grades. All grades are less than 35%.

6.3.1.2 SLOPE INFORMATION

The average grade of the property is 20%. The grade is very consistent and only varies by only 1 or 2 meters above or below a 20% sloped plane over the entire property, a distance of 240 meters (see Figure 25).

A grading plan identifying slopes falling within various steepness categories (i.e. greater than and less than 35%) can be found on the Slope Analysis Drawing in Appendix 8

6.3.2 Tree Management Plan

“How will trees be retained/replaced to:

- maintain park-like characteristics
- minimize view impact (from off-site)
- ensure proper drainage”

Trees in both the ravine and in the environmental set back area adjacent to the top ravine bank are protected under the District of West Vancouver's Bylaw 3984 and the Provincial regulations governing streamside protection and riparian areas. All significant trees in this area have been surveyed and are shown in Pottinger Gaherty's Tree Management Assessment and Inventory in Appendix 12. The park-like characteristics of this area will therefore be retained in its current natural state.

Significant trees located outside the protected areas have also been identified on the Survey and will be retained wherever possible. Where it is not possible to retain trees, new trees of the same variety will be planted on a ratio of 2 planted for each tree removed. Tree planting will be concentrated in areas adjacent to existing residential areas in an effort to mitigate any drainage issues and to minimize the view impact from off site. A detailed

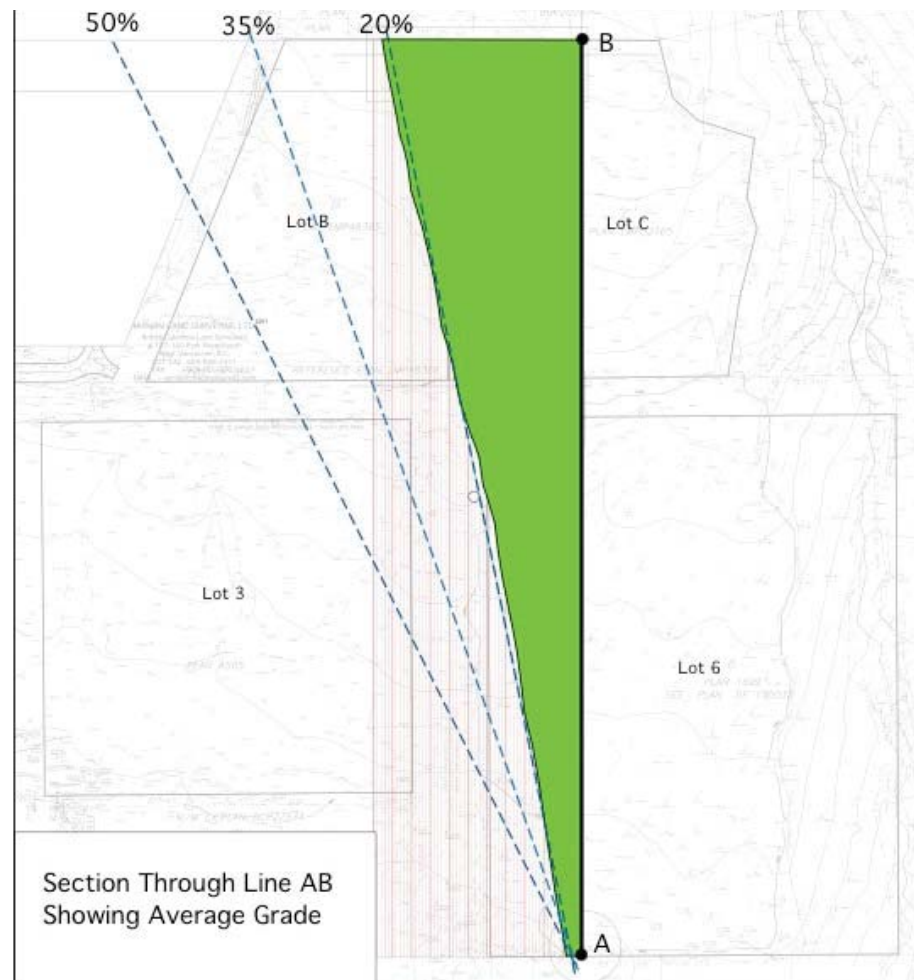


Figure 25

Tree Management Plan prepared by Pottinger Gaherty can be found in Appendix 13.

6.3.3 Storm Water Detention

“Incorporate management plan to protect the environment”

A storm water management plan has been developed to restrict the rate of run-off. Landscaped swales and seepage beds would be employed to detain run-off. Roof retention will also be considered when designing the individual residences.

For additional information on storm water detention see the Civil Engineering Brief found in Section 3 .

6.3.4 Road Impact

“Minimize widths

Incorporate areas of parking to fit in with lay of land
Integrate services in road allowance's where possible”

Road allowances have been kept to the absolute minimum width of 15 meters, as directed by District staff. Roads within these allowances will be restricted to 7 meters in width, with two lanes of 3.5 meters. Street parking will be accommodated locally where low profile roll-over curbs will enable access on to the parking pull off areas. The contours of the land have been taken into consideration in selecting the sections that will best accommodate parking.

Water main, hydro, gas and telecommunication lines will all be located within the road allowances. Storm and sanitary sewers will be also located in road allowances wherever possible.

Additional information can be found in Appendix 8.

6.3.5 Form and Character

“Natural colours and materials in construction materials

Encourage natural appearance to built form to fit topography”

It is the developer's intent to design, build and sell all of the residences in the proposed subdivision based on a Design Master Plan approach. Vacant lots will not be for sale to individuals who would then traditionally design and construct their own homes. As such the developer will retain and exercise

full control over the form and character of the neighbourhood.

The character of the neighbourhood will be west-coast contemporary. The natural materials of stone and wood will be used to construct the exterior of the houses as much as possible. Any man-made materials employed would be selected on the basis of texture (i.e. wood grain) and colour and selected on the basis of their ability to blend in with the natural surroundings. Dwellings will be situated such that they fit in with the lay of the land. Roofs will be low profile. For more detail on form and character refer to Appendix 13 of this application.

6.3.6 Light Pollution

“Minimize it.”

The developer is committed to minimizing light pollution and is working with the Royal Astronomical Society of Canada and RASC’s Light Abatement Program to achieve this goal.

RASC is well positioned to help address the issue light pollution and how it is best controlled in our project. They have a tremendous amount of information with respect to determining the type of lighting that should be used.

We will be working with Mark Eburne, Ex-President of Vancouver’s Chapter of RASC and Robert Dick, Chair of the Light-Pollution Abatement Committee at the national office.

RASC has found that when working with light abatement projects the default is often the antiquated bylaws and codes that are typically not very compatible with the control of light pollution. Much of Mr. Eburne’s time is spent at the municipal level trying to update and change existing bylaws to reflect a more proactive light management strategy.

RASC feels that there is an opportunity to use our development project to help improve and demonstrate a workable light pollution abatement strategy. RASC can certainly help to both develop that strategy and inform stakeholders.

Light Pollution is not solely an astronomical issue and RASC works hard to ensure the public understands that. Whether it is energy conservation, crime and safety, human health or natural environment protection, light pollution impacts us all and needs to be properly addressed. RASC has advised that for our project all of these issues will impose challenges. Being able to address them from a light pollution point of view is important to everyone.

6.3.7 Passive Design Practices

“Orientation, overhang, tree positioning”

The majority of the lots in the proposed subdivision have been oriented to facilitate south-facing dwellings. With views and slopes on the property to the south, will allow the feature windows to be ideally positioned for solar gain during winter months. Overhangs will be designed to allow for maximize sunlight to enter through the windows in the winter, while extending out far enough out to keep the windows in shade during the summer months. Trees will also be strategically selected and located to aid in producing a net solar gain for windows facing east and west. Window area on north facing walls will be kept to a minimum. (See Appendix 13) Homes will be super-insulated using polyurethane (or equivalent) foamed in place insulation thereby exceeding current Building Code requirements. The developer is committed to sustainable design practices.

6.3.8 Clustering

“Allow for spacing between clusters for landscaped areas”

The subdivision is small enough that it can be considered to be a cluster on its own. It will be isolated visually from other adjacent subdivisions. On the east side the proposed subdivision will be separated from Whitby Estates by the Marr Creek ravine. On the north it can be separated from the residents of Marr Creek Court by planting appropriate trees that do not negatively impact views or sun, immediately below the retaining wall that is located along the backs of properties on the south side of Marr Creek Court. On the south side of the site, the proposed subdivision would be separated from the residents below by an existing buffer zone that has a covenant protecting trees. On the west, Collingwood School and its surrounding property would provide separation for the proposed subdivision from residential neighbourhoods further to the west. With minimum 812 sqm lots and the setbacks required by the zoning bylaw, there is limited opportunity on this site for further clustering of homes.

6.3.9 Neighbourhood Identity

“Incorporate focal points”

6.3.9.1 General

There are a number of features that are planned for the subdivision that will help to give it some identity.

The most prominent feature would be the addition of an acre of parkland along the west side of the Marr Creek ravine. The new park area would tie together parkland to the north and to the south on the west side of Marr Creek that is currently separated by private land.

A second feature would be a 250-meter north south trail running just below the top of the west side of the Marr Creek ravine bank. The trail will be accessible from within the subdivision from 2 separate locations. Connections to the trail will be provided near the turn-a-rounds at the end of each cul-de-sac. The trail would connect to a similar existing trail extending north of the property. It is also proposed to extend the trail downhill approximately 80 meters south of the property where it would provide pedestrian access to Skilift Road.

The third feature would be a pedestrian bridge across the Marr Creek ravine. The bridge would be located at the bottom of an existing skidder road and constructed, in part, using natural materials. A path continuing uphill from the east end of the bridge would connect to the existing Marr Creek trail at the top of the bank on the east side of the ravine. This connection would provide a much shorter route from Whitby Estates to Collingwood School for those wishing to walk. When combined with the trails on either side of the ravine, it would open up an extensive trail network for residents to enjoy. The proponent will liaise with the District staff on the optimum design and location of this bridge connection.

6.3.9.2 East West Connection

There is an opportunity to better connect the Wentworth Subdivision with Whitby Estates to the east by means of upgrading the existing east-west trail that runs down and across the Marr Creek ravine at the east end of the Wentworth Avenue road allowance. There is an existing trail running parallel to and just above the rim on the east side of the Marr Creek ravine. This existing trail runs from Chippendale Road down to the first hairpin turn on Folkstone Way. There are 3 connections from Whitby Estates to the trail at the ends of Hudson Court and Constantine Place and at the Folkstone Way hairpin. There is also an existing trail on the west side of the ravine running the full length of the proposed subdivision. The majority of the trail on the west side is currently located on the privately held subject land. Details of the connection can be viewed on Drawing R4 in Appendix 8

6.3.9.3 Pedestrian Bridge

A Bridge could be constructed across Marr Creek to make the crossing easier and safer. It could be founded on the embankments 2 meters above and on opposite sides of the creek. If a bridge is in fact desirable it will have impact on Marr creek and further environmental investigation will have to be carried out.

Two different designs could be considered. The first is a traditional timber structure (see Figure 26).

The second option would offer a more elegant design incorporating curved glulam beams with timber planking. Closely spaced vertical steel dowels would provide stability for the structure and support for hand rails. (see Figure 27).

A fully engineered bridge design, conforming to the District's standards, would be submitted to the District for approval after a thorough environmental assessment is carried out.

6.3.9.4 Bridge Access

Access to the bridge from the west could be via the existing skidder road. The skidder road has an average grade of about 15% and a width of approximately 2 meters. The trail running from the rim of the ravine along the skidder road to the potential bridge abutment is about 40 meters in length.

On the east side of the Marr Creek ravine the narrow 'goat' trail that is currently in use could be expanded in width to provide a similar approach to the bridge to that on the west side. It could connect the potential bridge to the existing trail that runs along the top of the bank on the east side of the ravine. It would be of similar length, approximately 40 meters.

6.3.9.5 Trail Hazards

PGL has carried out an assessment of tree hazards in the vicinity of the trail. Their findings can be found in section 2.1.3.1 of Appendix 12.

A historical review using air photos and an on site investigation was carried out to determine the degree of risk of landslip for the trail. The geomorphology consists entirely of a well indurated alluvial till. The sedimentary formation was initially deposited over 10,000 years ago and has undergone significant cementation since that time. The ravine was cut into the formation during the massive glacial runoff period that followed glaciation as the glaciers melted and retreated. There are outcroppings of



Figure 26 Possible Pedestrian Bridge

the cemented till at numerous locations along the ravine, including locations along the bank of creek at the bottom of the ravine as well as at the top of the ravine. The material is competent and can stand up vertically over several meters without risk of slumping. There is no evidence of landslip anywhere in the ravine over the full length of the property. The risk of potential landslip is, therefore, considered negligible. The erosional process is thought to be soil creep in the upper most 50 centimeters. Freezing and thawing is the principle mechanism driving the soil creep, typically at a rate in the order of a few centimeters per year.

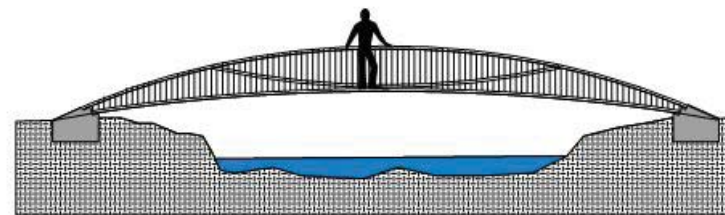


Figure 27 Possible Pedestrian Bridge

PGL carried out a cursory investigation of trees in the Marr Creek ravine to identify evidence of any landslip. They noted only minor pistol butting of a low percentage of the trees on the slope of the ravine, which is consistent with slopes exhibiting minor soil creep.

There are currently no drainage issues with the existing trails and none are anticipated for the sections of trail to be completed.

6.3.9.6 Design and Construction Standards

The trails for the most part already exist. The current location of the trails will be respected to minimize impact on Marr Creek. The trails could be widened slightly but the over all grades follow the natural contours of the ravine and there is little room to alter them if any. District of West Vancouver Standards will be used to guide the design and construction of the trail insofar as possible. (ref. Appendix)

6.3.9.7 Additional Trail Information

After further study on site with our civil, environmental and geotechnical engineers, it was determined that for the ravine the least invasive form of construction would be to 'hang' a wooden structure from 4 large existing trees located where the skidder road meets Marr Creek.

The proposed trees, from left to right, are a 1000 mm cedar, 700 mm hemlock, 900 mm hemlock and a 1100 mm cedar.

The largest span between the trees is 11 m across the actual Marr Creek channel. The level of the bridge deck can be positioned well above flood level. The trees are the 4 most prominent trees shown in the foreground of the photo below.

The building elements can be hand carried to position and the bridge will not require the construction of foundations or the use of heavy machinery in the ravine.

The plan shows the skidder road descending down to where the bridge would commence and the 4 trees that could potentially provide the suspension elements.

One option for the bridge would be to build a bridge similar to the tree top walk at the Capilano Suspension Bridge.

6.3.10 Wild Fire Mitigation

“Restrict roofing materials (e.g.)”

The North Shore is not immune to the types of wild fires we have seen in Australia, California and northern Alberta over the past decade. Indeed on the subject lot there is ample evidence of historical fires in the charred remains of tree stumps that are over 100 years old. And as the climate changes, with the steady progression of warmer and drier summers the risk of wildfires only increases.

In light of the historical evidence and the growing risk brought on by climate change, the proponent is not planning to use the traditional materials such as cedar shakes or cedar shingles to clad the roofs. Rather, roof cladding will be constructed by using as much Class-A fire-rated materials as possible. Materials will be selected that have a lower risk of flame spreading to reduce the risk of combustion as a result of wind-borne embers. Additionally, roofs will be very low pitch, which is also known to lower the risk of flame spread. It has been well established, however, that trees act as the principle source of fuel and wind borne embers in wildfires. The position and massing of trees will be reviewed and mitigation measures will be taken to minimize fire risk where appropriate. Similarly, care will be taken by the project Landscape Architect in the planting plan, and provision of ground planting types, bedding materials, and location in and around homes, to minimize the potential for fire damage and spread. (See Landscape Drawings. A separate application will be made under NE-1.

6.3.11 Watercourse Protection

“Locate development on least environmentally sensitive areas
Achieve no net loss of riparian habitat”

6.3.11.1 Existing Bylaws and Regulations

West Vancouver’s Official Community Plan (OCP) makes no mention of ‘ravine bank’ and sets out in its preamble that the Community Plan is,

“deliberately designed to be a statement of broad community objectives, rather than a detailed tool of implementation such as a zoning bylaw or a site-specific land use plan”.



The picture is taken from just upstream of the proposed crossing and shows the 2 trees on either side of the Marr Creek channel.

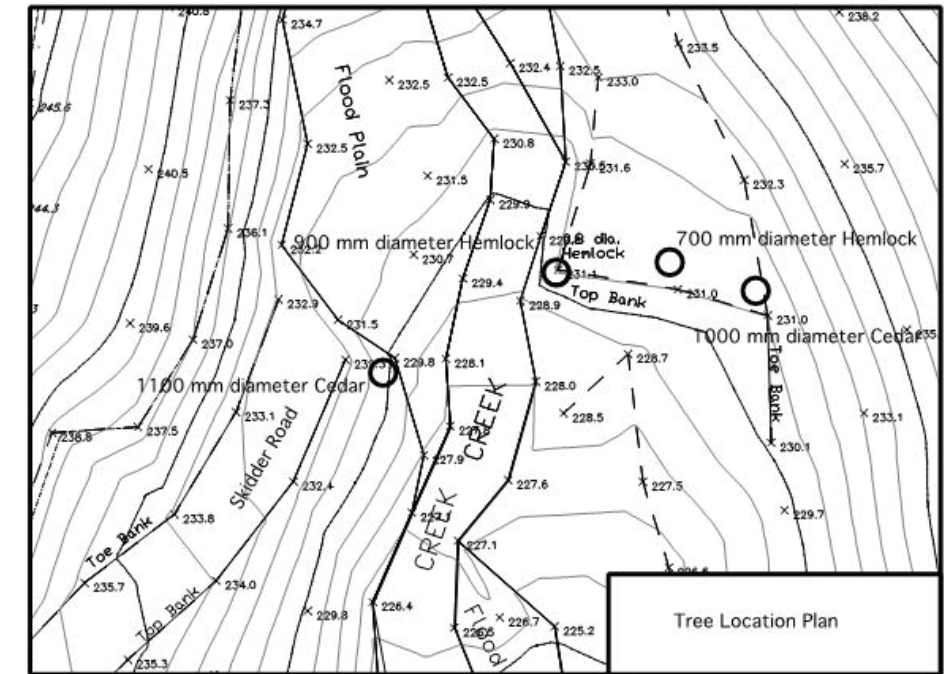


Figure 28 Tree Location Plan



The picture is taken from just upstream of the proposed crossing and shows the 2 trees on either side of the Marr Creek channel.



Capilano Suspension Bridge

The Upper Lands Development Permit Guidelines, part of the OCP, provide general principles for establishing the amount of land to be set aside in order to safeguard riparian areas. Watercourse protection is traditionally established by designating set-back distances from the top of the watercourse bank, or in some cases, ravine bank and influenced by whether the watercourse is fish bearing or not. The OCP guidelines, however, contain no definitions for the top of bank, top of watercourse bank or top of ravine bank and make no reference to whether the nature of the watercourse is fish bearing or not.

The applicable OCP guideline regarding setback conditions for a watercourse simply states:

“In order to achieve no net loss of riparian habitat, keep free of development the area within 30 meters of the top of the permanent watercourse bank or edge of a permanent wetland.”

The OCP guidelines do not address ravines that are in excess of 60 meters in width. There is no reference in the OCP guidelines indicating that it overrides other bylaws or provincial regulations governing streamside protection. There is no clause in the OCP stating, should any discrepancies between the OCP and other bylaws or provincial regulations exist, the OCP shall take precedence or that the regulation with the more onerous criteria shall govern. With the lack of any direction to the contrary, it is reasonable to assume that the OCP guideline should be read for the purpose it was intended and in conjunction with the bylaws and provincial regulations governing streamside protection.

The OCP guidelines do make reference to the provincial regulation governing Streamside Protection and the OCP is clear on its intent: “to achieve no net loss of riparian habitat”.

West Vancouver’s Development Procedures Bylaw #3984 -1996 (last amended in Bylaw No. 4188-1999) sets out the parameters for Development Permits. Schedule C of this bylaw, “Identifying Streamside Protection Areas” sets out a 30 m setback for certain conditions. However, it goes on to provide distinction between various categories of streamside protection and enhancement areas and to define ‘top of watercourse bank’ and ‘top of ravine bank’. The bylaw provides relief for the amount of setback required for ravines over 60 meters in width. In such case it allows for the setback

from the top of a ravine bank to be reduced from either 30 or 15 meters to 10 meters.

The Provincial regulation governing streamside protection of riparian areas is, in this respect, identical to West Vancouver’s Bylaw # 3984. The provincial regulations also call for a 30 m set back for certain categories of fish bearing streams. And like West Vancouver’s Bylaw, the Provincial regulations support relaxation of setbacks from 15 or 30 meters, depending on the category, to 10 meters for ravines greater than 60 meters.

When the width of large ravines (over 60 meters) is coupled with a further 10-meter setback from the top of the ravine there is seen to be more than an adequate setback from the actual watercourse bank itself. This is due to the fact that for ravines greater than 60 meters wide, it has been well established that riparian areas typically reside within the area of the ravine. For ravines greater than 60 meters, the strip of land beyond the top of the ravine bank (that is defined by the setback) acts as a buffer between developable areas and the ravine itself. In such wider ravines, a set back of 10 m beyond the top of ravine bank is generally sufficient to act as a buffer and ensure no loss of riparian habitat.

6.3.11.2 Practical Application

Most importantly, on the subject property, unlike many ravines, the land that lies beyond 10 meters from the top of the ravine bank consistently slopes away from and not towards the ravine. Consequently, any precipitation falling on the area between 10 and 30 m from the top of the ravine bank drains away the ravine. Consequently, no surface water collecting as a result of heavy rains in this 10 to 30 m zone would find its way to Marr Creek or the ravine in which it is located. Extending the set back by an additional 20 meters beyond the 10 meters required under the bylaw and provincial regulations would have no net benefit to protecting fish habitat. It should also be noted that, in contrast to the ravine and setback area, the area beyond 10 m of the top of the ravine bank has been recently logged. (Approximately 10 years ago)

The Provincial guideline on the regulation provides some guidance in this regard:

“Nature is not black and white. There will still be the need for some discretionary interpretation and plain old common sense in applying the SPR. The main thing to keep in mind is the purpose of the SPR – i.e., to

protect or enhance the features, functions and conditions that support fish life processes.”

The proposed subdivision design and Marr Creek setback meet the intent of the guidelines and regulations while protecting and enhancing Marr Creek and its fish habitat.

6.3.11.3 Historical Setback for Subdivisions on the Marr Creek Ravine

The subject land is the last parcel adjacent to Marr Creek to be developed in West Vancouver. Subdivision and associated house construction has occurred above and below the subject property. Development has also occurred, directly across the Marr Creek ravine, across and above and across and below the subject property. None of the subdivisions in these locations have incorporated a 30-meter setback from the top of the ravine. Many of the homes have been constructed, and at least 1 subdivision has been created, after 1st of June 2004, the date the current OCP was adopted. A subsequent application for a Development Permit for the Marr Creek Court subdivision, which was submitted in July of 2004 and approved in August of 2005, allowed home construction in the area between 10 and 30-meter from the top of the ravine bank. Other homes below the proposed subdivision and above Skilift Road have setbacks that are less than 5 meters from the top of the ravine bank.

The subject land subdivision proposal is consistent with these previous approvals.

6.3.11.4 Water Course Protection Approach

The proposed development is confined to areas that are the least environmentally sensitive and that have been recently cleared. The ravine and the 10 m setback area will be kept in their existing natural forms. Any work within this region would be subject to a separate permit application and confined to maintaining and improving existing trails and the infrastructure that supports them. Work would be carried out in this area only after obtaining the appropriate approvals from the District of West Vancouver. A number of invasive species have established themselves in the ravine, with English Ivy and Holly being the most common. It is proposed that these plants would be removed by hand.

A more detailed analysis for establishing the Marr Creek setback on the subject land is provided in an Environmental Report prepared by Pottinger

Gaherty Environmental Consultants Ltd. (Appendix 15) Pottinger Gaherty has provided further clarification with respect to the adequacy of the 10 m setback to protect Marr Creek's riparian zone in their Riparian Assessment Report in Appendix 10.

6.3.11.5 Species at Risk Study

Please refer to Appendix 19 for consultant's Habitat Assessment Report.

6.3.11.6 Environmental Assessment

Environmental Report prepared by Pottinger Gaherty Environmental Consultants Ltd. (Appendix 15)

6.3.11.7 Additional Protection

We have increased the area and width of a number of the lots along the setback zone to allow adequate private outdoor space and required site manipulation.

During the actual development, a temporary fence would be erected along the entire length of the 10 m setback line to protect both the riparian protection area and the significant/wildlife trees located in this area. New homes will be located no closer than 1.2 m from the 10 m set back line to allow for excavation and manipulation of materials between the new home and the riparian protection area. The roots of any trees that are within the 10 m setback area and close to its western boundary will be protected by strategically configuring the footprint of the homes such that adequate space is allowed for the roots. When excavating close to these areas, roots will be located by hand digging to minimize damage. PGL will supervise this work full time while it is being carried out to ensure contractor compliance.

6.4 SUBDIVISION APPROACH

6.4.1 Road Allowances

The existing 20-meter wide road allowance along the 25th Street corridor that extends north and uphill from Skilift to the site is too steep to accommodate vehicles at grade. Road grades have been analyzed by Creus Engineering and are well in excess of 25% in the section closest to Skilift Road, which render this option unviable as a surface access route to the property.

The 10-meter road allowance running east across the subject lands is too

narrow to effectively handle road and services and will be increased by 5 meter by way of dedication.

Two existing road allowances on the subject property will be reconfigured into a pattern that better conforms with the lay of the land. The widths of the existing road allowances will be adjusted to 15 m to better accommodate roads and services.

Access to the subdivision would be via the existing 10 m wide Wentworth Avenue road allowance that extends from then end of Wentworth Avenue. The width of this road allowance would be increased by 5 meters (from 10 meters to 15 meters) from the point where it enters the subject lands.

6.4.2 Ravine

The lots up against the ravine would terminate at the top of the ravine bank with all land below the top of the ravine bank dedicated as park and to be kept in its natural form. A covenant would be registered on the lots adjacent to the top of the ravine bank restricting any kind of alteration to the 10-meter area immediately west of the top of the ravine bank. Changing the status of the existing trail that runs parallel to and approximately 5 to 10 meters below the top of the west side of the ravine bank from private to public will help to minimize any illegal alterations to the ravine area by private residents. Currently where there is no trail, residents discard yard waste and other items such as flowerpots and spent Christmas trees into the ravine.

6.4.3 Roads

Road widths have been kept to the minimum allowed by District of West Vancouver Engineering staff. Roads are 7 meters in width in 15 m road allowances. Public road grades have been maintained at the maximum allowable (12%) to allow the roads to fit in with the lay of the land as much as possible. The curves have been designed with 25-meter centerline radii. (See Appendix 8 for more detail)

6.4.4 Driveways

Driveways would be positioned to minimize grades. The maximum grades of driveways will be 20% as directed by District staff.

6.5 SITE PREPARATION

c) Onsite fill and excavation materials

A significant amount of fill has been stored on the upper part of the site on lots B and C. The fill averages 2 to 3 meters in thickness. The contours on the survey in Appendix 6 record the initial grades prior to loading. A survey carried out after the loading was completed is shown on the next page (Figure 29). For larger scale drawing refer to Appendix 20. There is a note on the District of West Vancouver's GIS site to the effect that "Fill to be removed prior to development".

The fill is clean and is comprised entirely of material excavated at the time Collingwood's soccer field was being constructed. There is approximately 6,000 cubic meters of fill that has been stored in this location.

The intent will be to remove this fill from its current location for re-use in the southern portion of the site. The material will be used locally, insofar as possible and as appropriate, to fill low areas (much like all other excess material produced as a result of road cuts). Specifically, the material will be transported, placed and compacted in layers in areas requiring fill. The material placement will be carried out under the supervision of a geotechnical engineer and it will be tested to ensure it meets the required standards for the purpose it is being used.

In the event that portions of the material in question are deemed unsatisfactory for fill, such portions will be hauled off site and disposed in compliance with the laws of British Columbia.

6.6 WILDFIRE HAZARD RESPONSE

Subdivisions should be designed to address the following requirements for servicing and site layout:


- a. Firebreaks should be designed and installed where it is reasonably feasible or possible, which may be in the form of cleared parkland, roads, or utility right-of-ways.
- b. Locations for new building sites should be at least 10 m (defensible space) from any forest interface.
- c. Development shall be set back a minimum of 10 metres from the top of ridgelines, cliffs, or ravines.
- d. Buildings shall be sited and road access designed in order to accommodate fire fighting vehicles and equipment. Subdivisions should consider opportunities to improve road access for first responders and emergency equipment
- e. All utility servicing must be underground, or where this is not feasible, poles of non-combustible materials should be used (concrete).

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Plotfile: September 16, 2016, 11:03:39

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No.	Date	Revision	Dr.

Designed:	Checked:	Date: OCT 18 2009
Drawn: MB	Surveyed: SF	
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DGS CONSTRUCTION COMPANY LTD.	Client Project No
TOPOGRAPHIC PLAN	MCSL Project No. 2113-01964-0
COLLINGWOOD SCHOOL WEST VANCOUVER, B.C.	Drawing No. 01964-5
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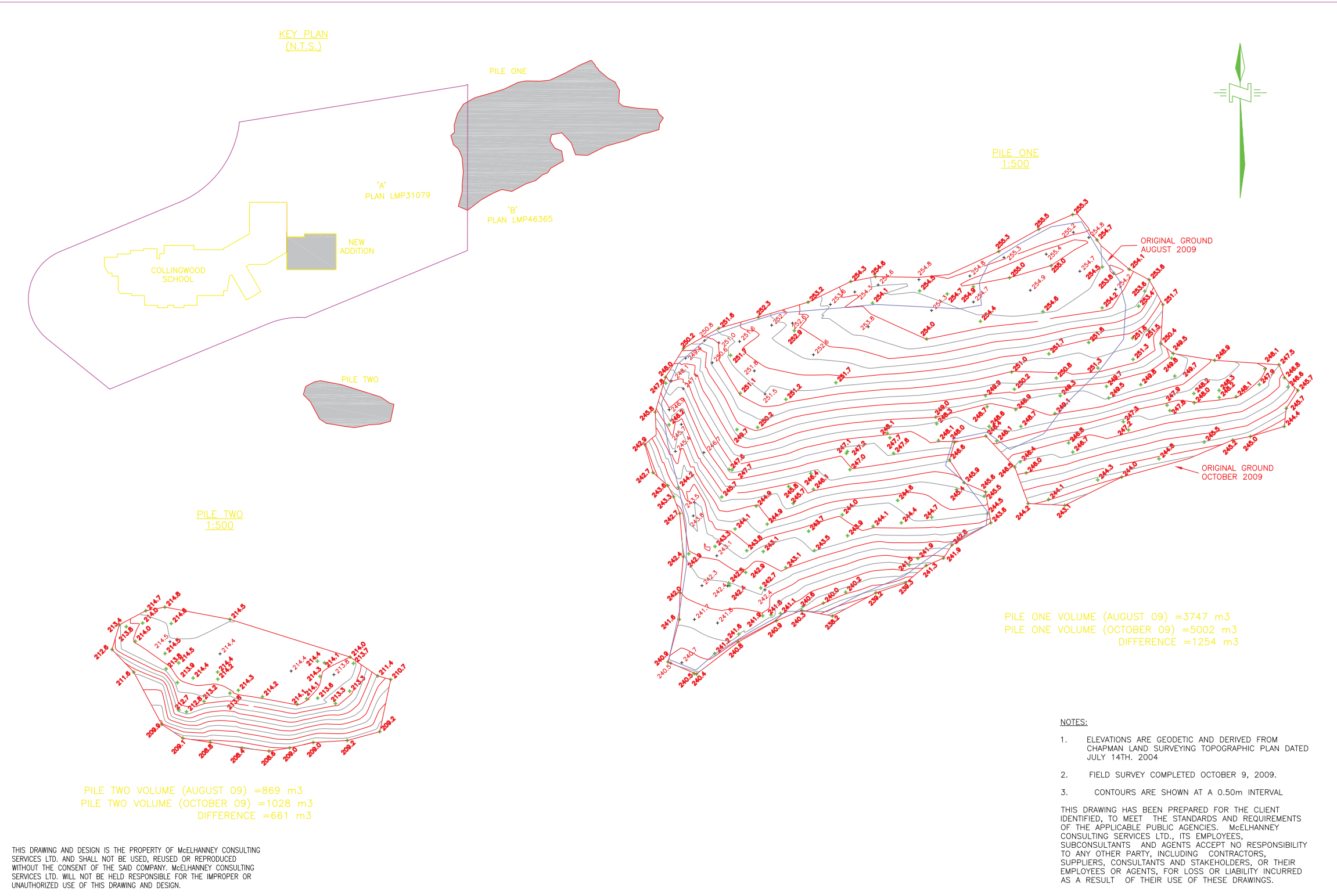


Figure 29 Fill Survey