

City of Surrey
PLANNING & DEVELOPMENT REPORT

File: 7917-0400-00

Planning Report Date: January 14, 2019

PROPOSAL:

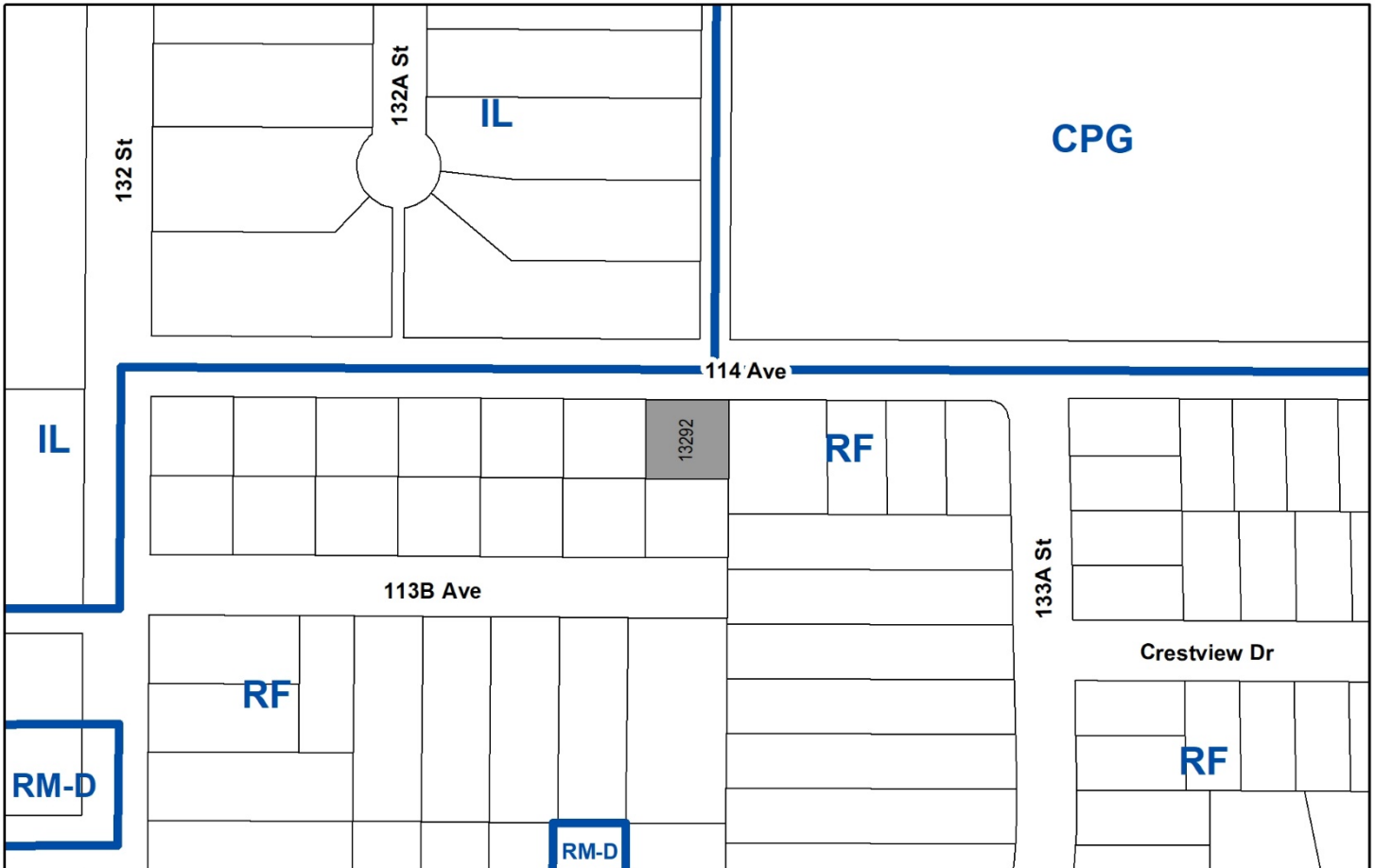
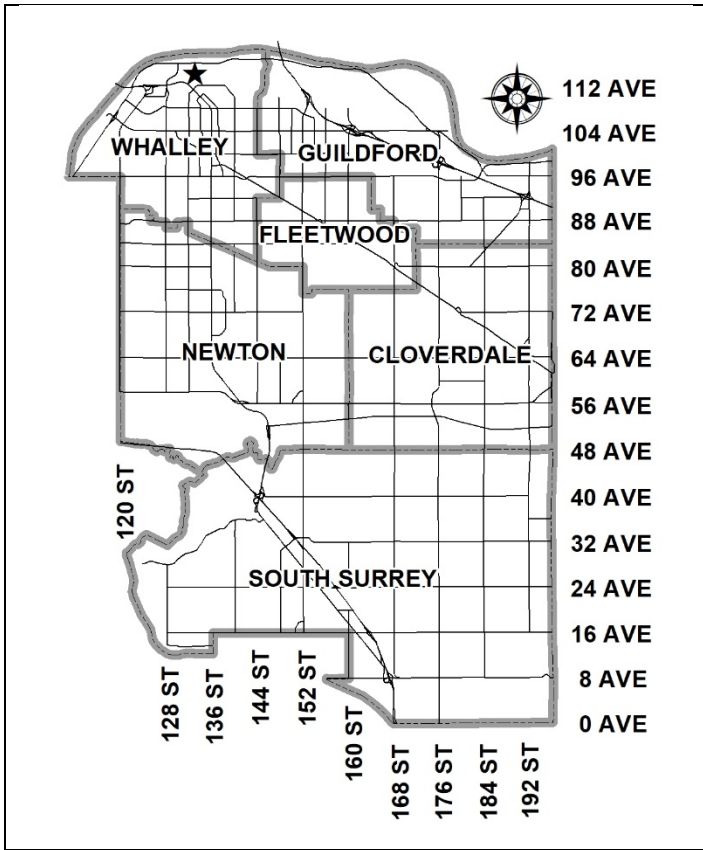
- **Development Permit**
- **Development Variance Permit**

to reduce the minimum streamside setback area for a Class A Natural Stream (Bolivar Creek), as measured from top-of-bank, as well as the front and rear setbacks to facilitate the construction of a single family dwelling on the lot.

LOCATION: 13292 - 114 Avenue

ZONING: RF

OCP DESIGNATION: Urban



RECOMMENDATION SUMMARY

- Approval to draft Sensitive Ecosystems (Streamside) and Hazard Lands (Steep Slopes) Development Permit.
- Approval for Development Variance Permit to proceed to Public Notification.

DEVIATION FROM PLANS, POLICIES OR REGULATIONS

- Seeking a variance to reduce the minimum streamside setback area for a Class A Natural Stream (Bolivar Creek) from 15 metres (50 ft.) to 6 metres (20 ft.), as measured from top-of-bank.
- In order to accommodate a home on the unencumbered portion of the subject property, the applicant is seeking to vary the RF Zone as follows:
 - Reduce the minimum front yard setback from 7.5 metres (25 ft.) to 6.0 metres (20 ft.) for the garage face, 4.5 metres (14.8 ft.) for the remainder of the front face of the principal building and 2.0 metres (6.5 ft.) for the front entry stairs; and
 - Reduce the minimum rear yard setback from 7.5 metres (25 ft.) to 4.5 metres (14.8 ft.) for 100% of the width of the rear building face.

RATIONALE OF RECOMMENDATION

- A Class A (red-coded) Natural Stream ('Bolivar Creek') runs south to north through the residential lot to the immediate east of the subject property. Furthermore, the subject site is encumbered by steep slopes in excess of a 20% gradient directly adjacent to the watercourse.
- Adhering to the required setbacks under the Zoning By-law would render approximately 75% of the property undevelopable, leaving only approximately 195 square metres (2,098 sq.ft.) available for (re-)development.
- The project Qualified Environmental Consultant (QEP) submitted a detailed Riparian Areas Regulations (RAR) Assessment which recommends an RAR Streamside Protection and Enhancement Area (SPEA) setback of 10 metres (30 ft.), as measured from high water mark of Bolivar Creek (equivalent to 6 metres / 20 ft. from the established top-of-bank). The RAR Assessment was audited by the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) and found to be acceptable.
- The applicant's QEP has provided an Ecosystem Development Plan (EDP) and Impact Mitigation Plan (IMP), which proposes the following measures:
 - The proposed Streamside Protection Area includes both the RAR SPEA and the accepted 6-metre (20-ft.) top-of-bank geotechnical setback;

-
- The applicant will be required to register a combined Statutory Right-of-Way and Restrictive Covenant (SRW/RC) against the property to protect the Streamside Protection Area;
 - An additional 5-metre (16.5-ft.) wide combination Statutory Right-of-Way / Restrictive Covenant for No-Build will be established outside of the Streamside Protection Area;
 - Fencing and signage will be installed along the boundary of the Streamside Protection Area to limit encroachment and identify it as an environmentally sensitive area;
 - The proposed Streamside Protection Area will be improved through the removal of invasive species as well as the planting of native tree and shrub species and the installation of coarse woody debris, which are to be maintained and monitored by the applicant's QEP for a minimum of five (5) years; and
 - Securities will be held by the City to ensure that the recommendations of the accepted EDP/IMP are followed.
- The applicant has demonstrated via a comprehensive geotechnical report that the proposed top-of-bank setback reductions will not result in any significant slope stability issues on the subject property. The geotechnical report has been peer-reviewed by an independent, third-party Qualified Professional and deemed to be acceptable. The accepted geotechnical requirements and recommendations, as well as a copy of the accepted site plan, will be incorporated into both the Hazard Lands Development Permit and a Section 219 Restrictive Covenant, which is registered against the property.
 - The applicant has provided a signed letter from the owner of the property to the immediate south (13291 – 113B Avenue) indicating that they have no objections to the proposed rear yard setback reductions.

RECOMMENDATION

The Planning & Development Department recommends that:

1. Council authorize staff to draft Sensitive Ecosystems (Streamside Areas) and Hazard Lands (Steep Slopes) Development Permit No. 7917-0400-00, generally in accordance with the attached drawing (Appendix V).
2. Council approve Development Variance Permit No. 7917-0400-00 (Appendix VI) varying the following, to proceed to Public Notification:
 - (a) to reduce the minimum streamside setback area for a Class A Natural Stream (Bolivar Creek) from 15 metres (50 ft.) to 6 metres (20 ft.), as measured from top-of-bank;
 - (b) to reduce the minimum front yard setback from 7.5 metres (25 ft.) to 6.0 metres (20 ft.) for the garage face, 4.5 metres (14.8 ft.) for the remainder of the front face of the principal building and 2.0 metres (6.5 ft.) for the front entry stairs; and
 - (c) to reduce the minimum rear yard setback of the RF Zone from 7.5 metres (25 ft.) to 4.5 metres (14.8 ft.) for 100% of the width of the rear building face.
3. Council instruct staff to resolve the following issues prior to approval:
 - (a) ensure that all engineering requirements and issues including restrictive covenants, dedications, and rights-of-way where necessary, are addressed to the satisfaction of the General Manager, Engineering;
 - (b) registration of a combination Statutory Right-of-Way/Restrictive Covenant over the identified Streamside Protection Area;
 - (c) registration of a 5-metre (16.5-ft.) wide Statutory Right-of-Way outside of the identified Streamside Protection Area, for 'No-Build' and access;
 - (d) registration of a Section 219 Restrictive Covenant to ensure that all on-site preparations and construction complies with the recommendations of the accepted geotechnical report;
 - (e) submission of a finalized Impact Mitigation Plan by the project Environmental Consultant, including a landscaping plan and cost estimate, to the specifications and satisfaction of the Planning and Development Department; and
 - (f) submission of a finalized tree survey and a statement regarding tree preservation to the satisfaction of the City Landscape Architect.

REFERRALS

- Engineering:** The Engineering Department has no objection to the project subject to the completion of Engineering servicing requirements as outlined in Appendix III.
- Parks, Recreation & Culture:** Parks supports the subject Development Variance Permit (DVP) provided that the Streamside Protection Area is improved through enhancement planting and protected in perpetuity through the registration of a combination SRW/RC as well as the installation of permanent riparian fencing.

SITE CHARACTERISTICS

Existing Land Use: Vacant residential lot.

Adjacent Area:

Direction	Existing Use	OCP Designation	Existing Zone
North (Across 114 Avenue):	Light industrial uses and City-owned parkland (Bolivar Park)	Industrial	IL and CPG
East:	Single family dwelling on residential lot containing a Class A Natural Stream (Bolivar Creek).	Urban	RF
South:	Single family dwelling	Urban	RF
West:	Single family dwelling	Urban	RF

DEVELOPMENT CONSIDERATIONSBackground and Current Proposal

- The 732-square metre (7,884-sq.ft.) subject lot is located at 13292 – 114 Avenue in Whalley. The subject property is approximately 27 metres (88.5 ft.) in width and 26 metres (85 ft.) in depth.
- The subject site is designated "Urban" in the Official Community Plan (OCP) and zoned "Single Family Residential Zone (RF)".
- A Class A (red-coded) Natural Stream ('Bolivar Creek') flows south to north within the residential lot to the immediate east of the subject property. The subject site is encumbered by steep slopes in excess of 20% gradient directly adjacent to the watercourse and therefore is located within both a Hazard Lands (Steep Slopes) and Sensitive Ecosystems (Streamside) Development Permit Area.

- Adhering to the required streamside setbacks under the Zoning By-law would render approximately 75% of the property undevelopable, leaving only approximately 195 square metres (2,098 sq.ft.) available for (re-)development.
- The applicant is seeking to construct a new 297 square metre (3,200 sq.ft.) single family dwelling on the subject property and is requesting a Development Variance Permit to reduce the minimum streamside setback area, as measured from top-of-bank, as well as to reduce the minimum front (north) and rear (south) yard setbacks of the RF Zone (see By-law Variances section).

Hazard Lands (Steep Slopes) Development Permit

- The site is subject to a Hazard Lands Development Permit for Steep Slopes due to the presence of steep slopes in excess of a 20% gradient within the eastern portion of the subject property, adjacent to Bolivar Creek.
- The overall west to east elevation differential is approximately 5 metres (16.5 ft.) across the entire width of the property, however, the majority of the western portion of the subject site consists of a sloping plateau with an 8-10% slope gradient from north to south.
- The applicant submitted a geotechnical report, prepared by Tony Yam Engineering Limited and dated August 8, 2017, which provides recommendations on site preparation, structural fill, seismic design of foundations, site drainage as well as a slope analysis with respect to establishing a geotechnical top-of-bank setback. The report was subsequently peer-reviewed by an independent, third-party Qualified Professional and a revised geotechnical report dated April 21, 2018, has deemed acceptable by the reviewer.
- The accepted geotechnical report recommends a 6-metre (20-ft.) geotechnical setback from the established top-of-bank, which will correspond to the 6-metre (20-ft.) wide Streamside Protection Area to be protected through the registration of a combination Statutory Right-of-Way / Restrictive Covenant for 'No-Build' and access as well as the installation of permanent protective fencing (see Sensitive Ecosystems Development Permit section).
- The locational requirements and recommendations in the accepted geotechnical report and site plan will be incorporated into both the Hazard Lands Development Permit as well as a Section 219 Restrictive Covenant, which will be registered against title.

Sensitive Ecosystems (Streamside) Development Permit

- Bolivar Creek, a Class A (red-code) Natural Stream runs south to north within the residential lot to the immediate east of the subject property.
- In accordance with Table B.2 of Part 7A Streamside Protection of the Surrey Zoning By-law for lots that existed prior to September 12, 2016, where zoning allows for single family dwelling and duplex uses, the minimum required streamside setback area for a Class Natural Stream is 15 metres (50 ft.), as measured from top-of-bank.

- The applicant is seeking a reduction to the minimum streamside setback area from 15 metres (50 ft.) to 6 metres (20 ft.), as measured from the top-of-bank (see By-law Variances section).
- The applicant has submitted an Ecosystem Development Plan (EDP) and Impact Mitigation Plan (IMP), prepared by Madrone Environmental Services Limited and dated October 29, 2018, which will form part of the subject Development Permit to ensure compliance with the recommendations of the project Qualified Environmental Professional (QEP).

TREES

- Krisanna Mazur, ISA Certified Arborist of Woodridge Tree Consulting Arborists Ltd., prepared an Arborist Assessment for the subject property. The table below provides a summary of the tree retention and removal by tree species:

Table 1: Summary of Tree Preservation by Tree Species:

Tree Species	Existing	Remove	Retain
Deciduous Trees			
Apple	1	1	0
Plum	1	1	0
Coniferous Trees			
Cypress	1	0	1
Western Red Cedar	4	4	0
Total	7	6	1
City (Boulevard)	2	1	1
Additional Trees in the proposed Streamside Protection Area	1	0	1
Total Replacement Trees Proposed (excluding Boulevard Street Trees)		7	
Total Retained and Replacement Trees		8	
Contribution to the Green City Fund		\$2,800.00	

- The Arborist Assessment states that there is a total of nine (9) mature trees on the site, excluding the proposed Streamside Protection Area, with no Alder or Cottonwood trees. It was determined that one (1) tree can be retained as part of this development proposal. The proposed tree retention was assessed taking into consideration the location of services, building footprints, and proposed lot grading.

- The majority of the mature trees (six (6) of the nine (9)) on the site are in poor to moderate condition. Five (5) mature trees are identified as having retention suitability only if retained as a row along the western lot line, however, these trees are proposed for removal as they significantly encroach into the proposed building footprint.
- One (1) of the two (2) City trees along the 114 Avenue site frontage will be retained. Parks, Recreation & Culture staff confirm that they support the removal of one (1) boulevard tree due to its existing condition and future conflict with the relocated driveway letdown.
- Table 1 includes one (1) additional mature tree that is located within the proposed Streamside Protection Area. This tree will be retained and incorporated into the enhancement planting proposed under the Ecosystem Development Plan and Impact Mitigation Plan.
- For those trees that cannot be retained, the applicant will be required to plant trees on a 2 to 1 replacement ratio. This will require a total of fourteen (14) replacement trees on the site. The applicant is proposing seven (7) replacement trees, with the majority (6 of the 7 replacement trees) located within the proposed Streamside Protection Area, meeting City requirements. The deficit of seven (7) replacement trees will require a cash-in-lieu payment of \$2,800, representing \$400 per tree, to the Green City Fund, in accordance with the City's Tree Protection By-law.
- New trees planted within the proposed Streamside Protection Area will consist of native species, such as Pacific Willow, Western Hemlock, Bigleaf Maple and Western Red Cedar.
- In summary, a total of eight (8) trees are proposed to be retained or replaced on the site with a contribution of \$2,800 to the Green City Fund.

BY-LAW VARIANCES AND JUSTIFICATION

(a) Requested Variance:

- To reduce the minimum streamside setback area for a Class A Natural Stream (Bolivar Creek) from 15 metres (50 ft.) to 6 metres (20 ft.), as measured from top-of-bank.

Applicant's Reasons:

- Compliance with the required 15-metre (50-ft.) streamside setback area of the Surrey Zoning By-law would significantly impact the ability to construct an adequately sized home, with a functional floor plan and useable yard space, on the property.
- Adhering to the required setbacks under the Zoning By-law would render approximately 75% of the property undevelopable, leaving only 195 square metres (2,098 sq.ft.) available for redevelopment.

Staff Comments:

- The applicant's Qualified Environmental Professional (QEP) conducted a detailed Riparian Areas Regulations (RAR) Assessment report which recommends an RAR Streamside Protection and Enhancement Area (SPEA) setback of 10 metres (33 ft.), as measured from the high water mark of Bolivar Creek (equivalent to 6 metres (20 ft.) from the established top-of-bank). The RAR Assessment report was audited by the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) as well as reviewed by City staff and found to be acceptable.
- The applicant's QEP has provided an Ecosystem Development Plan (EDP) and Impact Mitigation Plan (IMP), which proposes the following measures:
 - The proposed 6-metre (20-ft.) Streamside Protection Area, as measured from top-of-bank, includes both the RAR SPEA and the accepted geotechnical setback;
 - The proposed Streamside Protection Area will be protected through the registration of a combination Statutory Right-of-Way / Restrictive Covenant (SRW/RC) for 'No-Build' and conveyance access. Encroachment will further be limited through the installation of 1.2-metre (4-ft.) high permanent riparian protection fencing along the western edge of the Streamside Protection Area, which is to remain in place for perpetuity;
 - An additional 5-metre (16.5-ft.) wide combination Statutory Right-of-Way / Restrictive Covenant for No-Build will be established outside of the Streamside Protection Area. This area will provide for additional access to the riparian area and will remain accessible to the property owner for use as grassed yard space;
 - The proposed Streamside Protection Area will be improved through the removal of invasive species as well as the planting of native tree and shrub species and the installation of coarse woody debris to remediate the previously disturbed riparian areas and promote wildlife enhancement value. Proposed works are to be maintained and monitored by the applicant's QEP for a minimum of five (5) years; and
 - Securities, equal to 100% of the total landscaping costs, will be held by the City to ensure that the recommendations of the accepted EDP/IMP are followed. The project QEP will be required to submit yearly monitoring reports with security release tied to the successful installation, inspection and establishment of the enhancement planting in a 'free-growing' stage.
- The EDP and IMP were reviewed by staff and found to be acceptable. Protection of the Streamside Protection Area, through the registration of a combination SRW/RC and installation of permanent protection fencing, conforms to the minimum acceptable safeguarding requirements of the Sensitive Ecosystems DP3 Guidelines.

- Engineering staff have confirmed that statutory rights-of-way have been registered against the residential property to the immediate east (13314 – 114 Avenue), which contains the Bolivar Creek channel, in order to service the existing 114 Avenue stormwater culvert, diffuser/weir and toe-of-slope armouring which have been installed.
- Staff support the proposed variance to proceed to Public Notification.

(b) Requested Variances:

- To reduce the minimum front yard setback from 7.5 metres (25 ft.) to 6.0 metres (20 ft.) for the garage face, 4.5 metres (14.8 ft.) to the remainder of the front face of the principal building and 2.0 metres (6.5 ft.) for the entry stairs; and
- To reduce the minimum rear (south) yard setback of the RF Zone from 7.5 metres (25 ft.) to 4.5 metres (14.8 ft.) for 100% of the width of the rear building face of the principal building.

Applicant's Reasons:

- The proposed front and rear yard variances are required in order to achieve a reasonably sized home with a better functioning floor plan on the remaining, unencumbered portion of the subject property.

Staff Comments:

- The proposed variances to the front yard setback will not negatively affect the streetscape along 114 Avenue as those portions of the proposed home reduced to within 4.5 metres (14.8 ft.) and 2.0 metres (6.5 ft.) of the front lot line consist of 1.5-storey hipped roof projections and open-riser entry stairs which only marginally contribute to the overall massing.
- Off-street parking will not be affected by the proposed reduction to the minimum front (north) yard setback. The proposed 6.0-metre (20-ft.) setback between the front lot line and garage portion of the principal building will allow the subject site to accommodate four (4) off-street parking spaces, two (2) in the garage and two (2) within the driveway.
- The lot depth of the subject property (26.3 metres / 86.6 ft.), which was created in 1957, is below the minimum required lot depth for lots created under the RF Zone (28 metres / 92 ft.). The majority of existing homes in the surrounding neighbourhood have wide, shallow building footprints, which cannot be attained on the subject site due to the required streamside setbacks.
- Although the proposed variances to the rear yard setbacks will result in a reduction to useable rear yard space, the property owners will have access to the 5-metre (16.5-ft.) wide 'No-Build' area outside of the fenced Streamside Protection Area, which is intended to be retained as grassed yard space.

- The applicant has provided a letter from the property owner to the immediate south (13291 – 113B Avenue) indicating that they have no objections to the proposed rear yard variance, provided that there is no damage to their property during the construction of the proposed house.
- Staff support the proposed variances to proceed to Public Notification.

INFORMATION ATTACHED TO THIS REPORT

The following information is attached to this Report:

Appendix I.	Lot Owners and Action Summary (Confidential)
Appendix II.	Proposed Site Plan
Appendix III.	Engineering Summary
Appendix IV.	Summary of Tree Survey and Tree Preservation
Appendix V.	Environmental Report Site Plan
Appendix VI.	Development Variance Permit No. 7917-0400-00

INFORMATION AVAILABLE ON FILE

- Detailed Riparian Areas Regulation (RAR) Assessment, prepared by Madrone Environmental Services Limited and dated June 14, 2016.
- Environmental Report, prepared by Madrone Environmental Services Limited and dated October 29, 2018.
- Geotechnical Study, prepared by Tony Yam Engineering Limited and dated April 21, 2018.
- Geotechnical Study – Peer Review, prepared by WSP Canada Inc., and dated January 31, 2018.

original signed by Ron Gill

Jean Lamontagne
General Manager
Planning and Development

CRL/cm

APPENDIX I HAS BEEN
REMOVED AS IT CONTAINS
CONFIDENTIAL INFORMATION

**TO: Manager, Area Planning & Development
- North Surrey Division
Planning and Development Department**

FROM: Development Engineer, Engineering Department

DATE: Dec 20, 2018 **PROJECT FILE: 7817-0400-00**

**RE: Engineering Requirements
Location: 13292 114 Avenue**

DEVELOPMENT PERMIT

The following issues are to be addressed as a condition of issuance of the Development Permit for Sensitive Ecosystems (Streamside) associated with the proposed new single family dwelling::

- Provide combined statutory right-of-way/restrictive covenant for the class "A" watercourse located within the site.
- Provide a 5.0m statutory right-of-way outside of the proposed statutory right-of-way/restrictive covenant for the class "A" watercourse for drainage maintenance access.

DEVELOPMENT VARIANCE PERMIT

There are no engineering requirements relative to issuance of the Development Variance Permit.

BUILDING PERMIT

The following issues are to be addressed as a condition of issuance of a Building Permit for the proposed new single family dwelling:

- Submit a video inspection of the existing sanitary service connection to confirm the material and condition meets City Standards. If the service does not meet current standards then a new service connection is to be installed.
- Abandon the existing water service connection and install a new water service connection. The abandonment and installation is to be completed by City forces at the owners cost.
- Provide a storm service connection to the fronting ditch. The MBE calculations will be reviewed as part of the BP review process.
- Grade all new impervious surfaces towards surrounding pervious areas to provide on-lot infiltration.

A Servicing Agreement is not required for the proposed Development Permit or Development Variance Permit.

A processing fee of \$1,580.225 (GTS included 2018 rate) is needed to administer the legal document requirements.



Tommy Buchmann, P.Eng.
Acting Development Services Manager

CE4

Tree Preservation Summary

Surrey Project No: 17-0400

Address: 13292 114 Avenue

Registered Arborist: Woodridge Tree Consulting Arborists Ltd., Krisanna Mazur - PN7530A

On-Site Trees	Number of Trees	Off-Site Trees	Number of Trees
Protected Trees Identified *	9	Protected Trees Identified	1
Protected Trees to be Removed	7	Protected Trees to be Removed	0
Protected Trees to be Retained (excluding trees within proposed open space or riparian areas)	2	Protected Trees to be Retained	1
Total Replacement Trees Required: <ul style="list-style-type: none"> - Alder & Cottonwoods to be removed (1:1) 0 X one (1) = 0 - All other species to be removed (2:1) 7 X two (2) = 14 	14	Total Replacement Trees Required: <ul style="list-style-type: none"> - Alder & Cottonwoods to be removed (1:1) 0 X one (1) = 0 - All other species to be removed (2:1) 0 X two (2) = 0 	0
Replacement Trees Proposed	7	Replacement Trees Proposed	-
Replacement Trees in Deficit	7	Replacement Trees in Deficit	-
Protected Trees to be Retained in Proposed Open Space or Riparian Areas	1		
*on-site and shared trees, including trees within boulevards and proposed streets and lanes, but excluding trees in proposed open space or riparian areas			

Summary, report and plan prepared and submitted by:



September 27, 2018

(Signature of Arborist)

Date

**Tree Plan for Development at
13292 114 Avenue
Surrey, BC**

**Date: August 28, 2018
Updated: September 27, 2018**

Tree Inventory

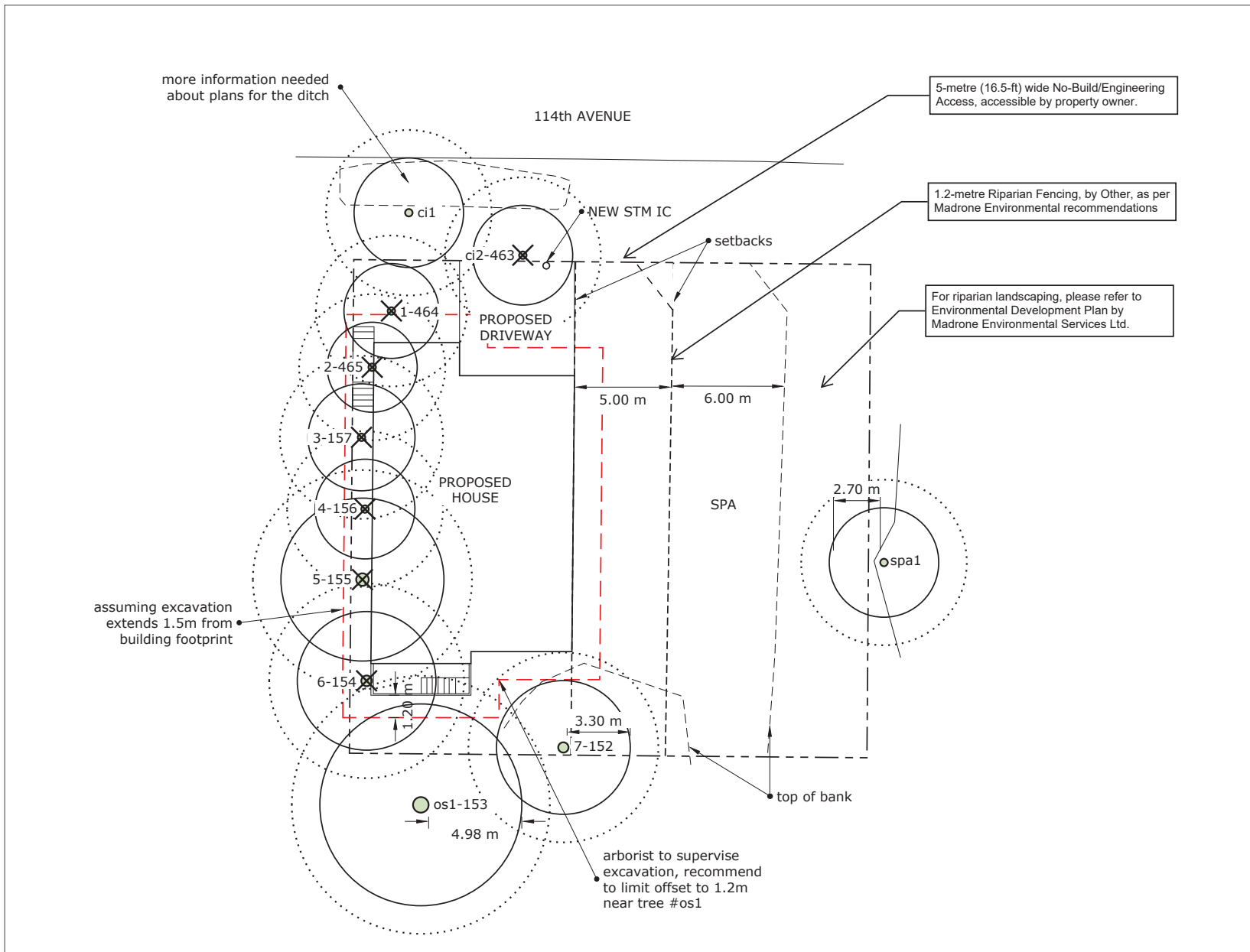
Tag	Species	DBH (cm)	TPZ (m)
ci1	Western red cedar	45	2.70
ci2	Cherry	41	2.46
1	Apple	39	2.34
2	Plum	37	2.22
3	Western red cedar	44	2.64
4	Western red cedar	41	2.46
5	Western red cedar	67	4.02
6	Western red cedar	57	3.42
7	Cypress	55	3.30
os1	Cherry	83	4.98
spa1	Cherry	45	2.70

Notes

Works to be completed inside SPA include installation of permanent fencing along edge of 6.0m SPA and riparian planting

Legend

N
 x = remove tree
 [tree barrier]
 no build zone
 center of tree
 DBH x 6 + 1/2 of DBH
 1m 1:200 10m



**Replacement Tree Plan for
13292 114 Avenue
Surrey, BC**

Date: September 27, 2018

Replacement Trees

Tag	Species
rt1	Persian ironwood
rt2	Western red cedar
rt3	Vine maple
rt4	Pacific willow
rt5	Bigleaf maple
rt6	Western hemlock
rt7	Western red cedar
rt8	Western hemlock
rt9	Vine maple
rt10	Western red cedar
rt11	Western hemlock
rt12	Vine maple
rt13	Pacific willow
rt14	Western hemlock

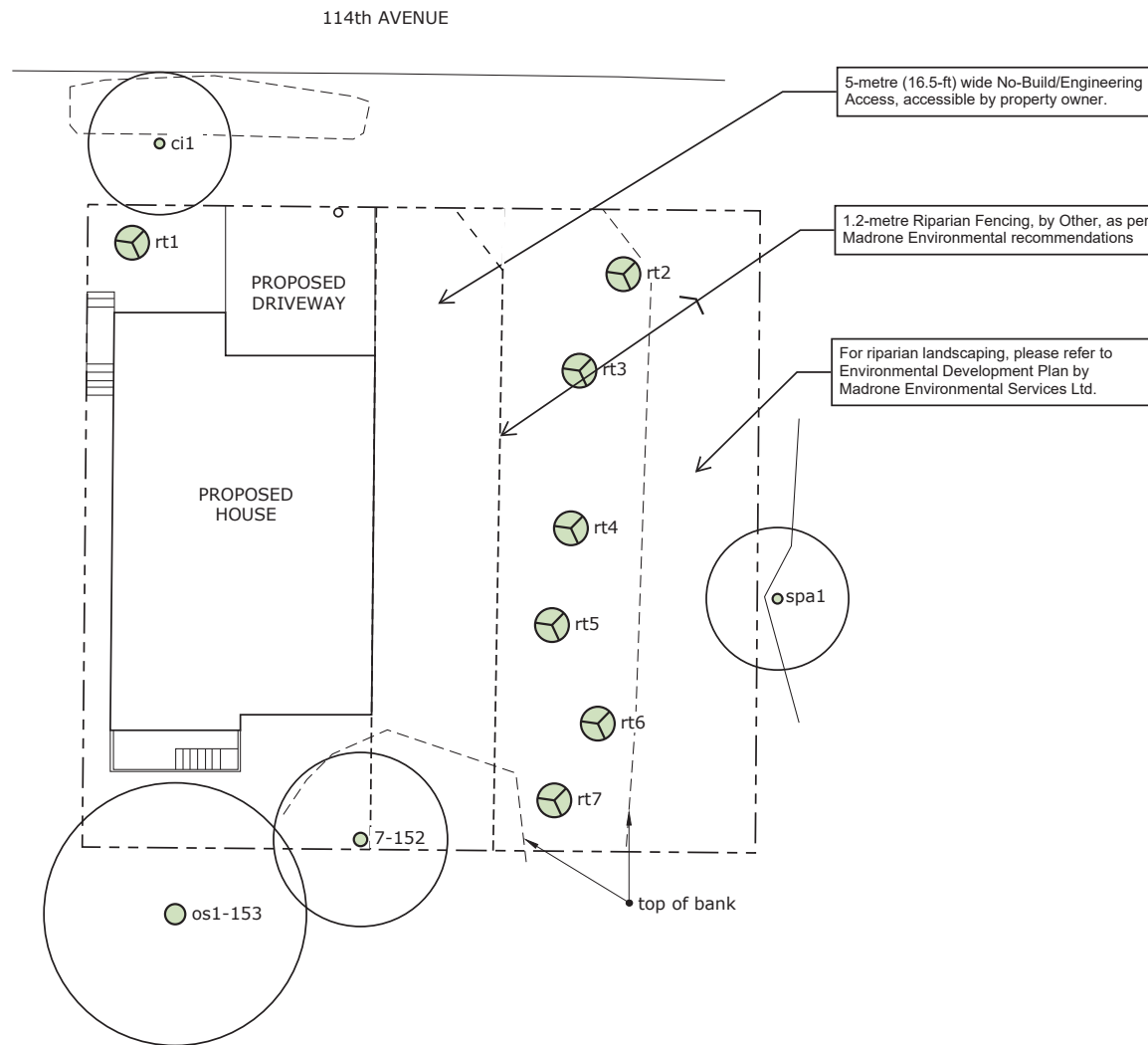
Notes

replacement trees to have a minimum size of 5cm caliper if deciduous or 3m tall if coniferous

replacement tree selection, planting and maintenance to meet or exceed BCLNA/BCSLA Landscape Standards

Legend

N
 = replacement tree
 = existing tree



ENVIRONMENTAL NOTES

The purpose of this planting plan is to support the ecosystem development plan prepared Madrone Environmental Services Ltd., dated June 2017, revised September 25 then October 29, 2018, to ensure compliance with the City of Surrey (CoS) bylaws and intent of the CoS Official Community Plan (OCP). Restoration planting will be in accordance with the Riparian Areas Regulation Re-Vegetation Guidelines (2012). All planting, ESC and stability measures will be conducted and implemented above the Top of Bank. All replacement tree species, tags, and locations included in this plan were provided by Woodbridge Consulting Arborists Ltd.

Planting Location

- The property is located at 13292 114 Avenue on the south side of 114 Avenue in Surrey, BC.
- The arborist requests some trees planted below the top of the slope. Madrone restricted shrub planting to above the top of the slope because the slope to the creek already has well established shrub cover.
- The planting area for shrubs is approximately 158.4 m² consisting of a 26.4 m long x 6 m wide riparian strip along the top of bank to Boliver Creek. Trees are planted over an area twice that size because of inclusion of the slope.

Invasive Plant Removal

- Most invasive species onsite are annuals or shallow rooted-perennials. All Invasive species must be removed from within 1 m of each planted plant.
- Invasive plant control efforts will need to continue through plant establishment phase with on-going regrowth cutting to assist the dense planting of thicket growing shrubs to out-compete and shade-out invasive regeneration.

Soil Preparation

- Soils will be prepared for planting to provide an appropriate growth medium through decompaction, scarification and/or augmentation. To promote native plant survival, the soil should be grubbed to a minimum depth of 0.5 m. Soil preparation will include manual or mechanical separation of existing vegetation, grasses, and non-native invasive species. The bare, prepared soil will be covered with a layer of straw at a minimum depth of 5cm.
- The soils at this planting location are typically moist. Madrone recommends that microsites such as hummocks, swales, and pits be created during soil preparation to create varying moisture, shade and nutrient regimes favoured by certain plant species.

Planting Criteria

- All plants must be well-established relative to recommended pot size.
- Qualified Environmental Professional (QEP) will be onsite during planting activities, and will provide the City of Surrey a post- construction report outlining the works.
- All trees will be planted 1m above the High Water Mark (HWM) as to not impact maintenance requirements by the CoS. No significant trees that could de-stabilize channel banks at maturity will be planted below the Top of Bank. All trees will be planted in accordance with CoS Replacement Tree Guideline requirements in accordance with the CoS Tree Protection Bylaw
- All plants must have been grown for a length of time necessary to permit the roots to fill and hold soil within the container as required by the *Canadian Nursery and Landscape Associated Standards* for nursery stock. The contractor will ensure that plants bond with the growing medium and that plant growth above the top of bank is trained to project outward over the bank crest to assist in shading out moisture tolerant invasive species regeneration along the bank slope.
- Shrubs will be planted on 1.5m centres with thicket growing shrubs cluster planted on 0.5 m centres where appropriate. Herbaceous plants will be planted on 1.0m centres in moist shady areas (i.e., under the drip line of the replacement trees). Trees will be planted as per Woodbridge's specification
- Disturbed areas between plants should be covered with native grass seed.

Plant Survival

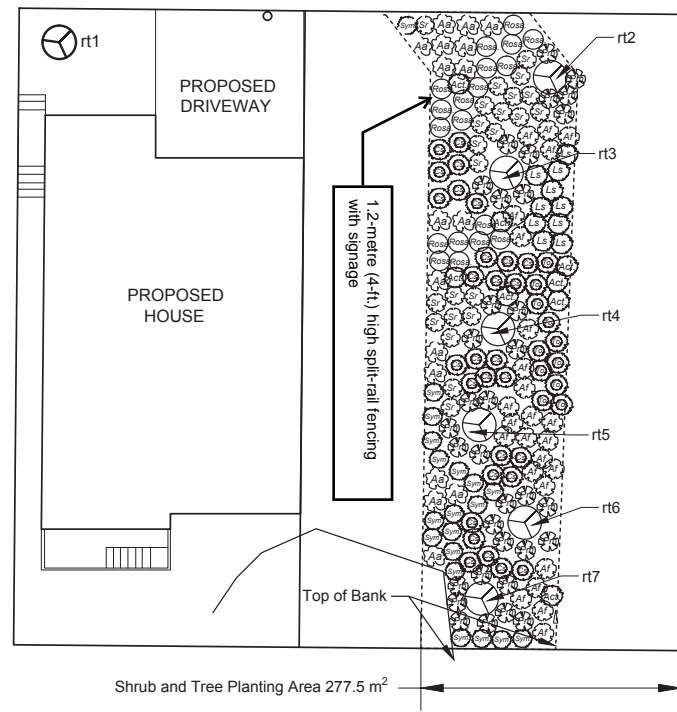
- The target survival will be 80% for shrubs and 90% for trees over 3 year period. The developer must ensure plant survival as noted above or replace dead plants.
- Invasive plant control maintenance is required to be conducted every 4 - 6 weeks, and a weekly watering program will be instituted through the dry summer months (May - September) in the first year after planting, with biweekly watering in the second summer.
- A detailed monitoring plan is included in the Environmental Assessment and Environmental Development Plan prepared by Madrone, 2018.

RIPARIAN MANAGEMENT AREA RE-VEGETATION SPECIES LIST							
SYMBOL	COMMON NAME	LATIN NAME	MICROSITE CONDITION	POT SIZE	SPACING	NUMBER	
	Saskatoon Berry	<i>Amelanchier alnifolia</i>		D,M #1 Pot	1.5 m	16	
	Nootka rose	<i>Rosa nutkana</i>		D,M #1 Pot	1.5 m	19	
	Snowberry	<i>Symphoricarpos albus</i>		M,W #1 Pot	1.5 m	18	
	Red osier dogwood	<i>Cornus sericea</i>		M #1 Pot	1.5 m	16	
	Red elderberry	<i>Sambucus racemosa</i>		M #1 Pot	1.5 m	13	
	Sword fern	<i>Polystichum munitum</i>		D,M #1 Pot	1.5 m	15	
	Lady fern	<i>Athyrium filix-femina</i>		D,M #1 Pot	1.5 m	15	
	Bleeding Heart	<i>Lamprocapnos spectabilis</i>		D,M #1 Pot	1.0 m	15	
	Trillium	<i>Trillium ovatum</i>		M,W #1 Pot	1.0 m	12	
	Red bugbane	<i>Actaea elata var. elata</i>		M #1 Pot	1.0 m	11	
(Wet=W, Moist=M, Dry=D)						Total Shrubs	150

Replacement Trees	
Tag	Species
rt1	Persian ironwood
rt2	Western red cedar
rt3	Vine maple
rt4	Pacific willow
rt5	Bigleaf maple
rt6	Western hemlock
rt7	Western red cedar
Total Trees	
7	

Note:
Replacement trees to have a minimum of 5cm caliper if deciduous or 3m tall if coniferous. Replacement tree selection, planting and maintenance to meet or exceed BCLNA/BCSLA Landscape Standards.
Replacement tree plan prepared by Woodbridge Tree Consulting Arborists Ltd.

Replacement Trees



SIGNAGE DETAIL

SENSITIVE FISH AND WILDLIFE HABITAT
BEYOND THIS FENCE
PLEASE DO NOT DISTURB
AREA PROTECTION BY MUNICIPAL,
PROVINCIAL AND FEDERAL LEGISLATION.

- Signs are:
1. Sign of 270mm x 125mm
 2. 3mm sign grade aluminum with white reflective background
 3. Font sizes and gaps, as noted
 4. Black lettering
 5. Screen print or for small runs of 6 or fewer, premium 7 year 2 mil vinyl
 6. 1 cm radius cut corner, and all sharp corner eliminated
 7. Punch holes at all four corners or to suit so that the sign can be secured to the fence
 8. Install one (1) sign every 15m
 9. Install the signs for easy visibility to the occupiers of the property and/or to the public.

DRAWN	S.O
DESIGNED	L.K
CHECKED	S.O
APPROVED	L.K
SCALE	AS SHOWN

PLANTING PLAN

CITY OF SURREY

13292 114 Avenue

DATE 18/10/29

SHEET 1 of 1

DWG. No. 17.0259

CITY OF SURREY

(the "City")

DEVELOPMENT VARIANCE PERMIT

NO.: 7917-0400-00

Issued To:

(the "Owner")

Address of Owner:

1. This development variance permit is issued subject to compliance by the Owner with all statutes, by-laws, orders, regulations or agreements, except as specifically varied by this development variance permit.
2. This development variance permit applies to that real property including land with or without improvements located within the City of Surrey, with the legal description and civic address as follows:

Parcel Identifier: 002-290-332

Lot 13 Section 10 Block 5 North Range 2 West New Westminster District Plan 17929

13292 - 114 Avenue

(the "Land")

3. Surrey Zoning By-law, 1993, No. 12000, as amended is varied as follows:
 - (a) In Table B.2 of Part 7A "Streamside Protection", the minimum streamside setback area for a "Class A Natural Stream" is reduced from 15 metres (50 ft.) to 6 metres (20 ft.), as measured from top-of-bank;
 - (b) In Section F. Yards and Setbacks of Part 16 "Single Family Residential Zone (RF)", the minimum front yard setback is reduced from 7.5 metres (25 ft.) to 6.0 metres (20 ft.) for the garage portion of the principal building, 4.5 metres (14.8 ft.) for the remaining portion of the front face of the principal building and 2.0 metres (6.5 ft.) for the front entry stairs; and
 - (c) In Section F. Yards and Setbacks of Part 16 "Single Family Residential Zone (RF)", the minimum rear yard setback is reduced from 7.5 metres (25 ft.) to 4.5 metres (14.8 ft.) for 100% of the width of the rear building face of the principal building.

4. This development variance permit applies to only that portion of the buildings and structures on the Land shown on Schedule A which is attached hereto and forms part of this development variance permit. This development variance permit does not apply to additions to, or replacement of, any of the existing buildings shown on attached Schedule A, which is attached hereto and forms part of this development variance permit.
5. The Land shall be developed strictly in accordance with the terms and conditions and provisions of this development variance permit.
6. This development variance permit shall lapse if the Owner does not substantially start any construction with respect to which this development variance permit is issued, within two (2) years after the date this development variance permit is issued.
7. The terms of this development variance permit or any amendment to it, are binding on all persons who acquire an interest in the Land.
8. This development variance permit is not a building permit.

AUTHORIZING RESOLUTION PASSED BY THE COUNCIL, THE DAY OF , 20 .
ISSUED THIS DAY OF , 20 .

Mayor – Doug McCallum

City Clerk

