Schedule 2 to the Minutes of the Planning Committee meeting of Richmond City Council held on Tuesday, June 16, 2015..

City of Richmond

PLANNING COMMITTEE MEETING

SUBMISSION PACKAGE

June 16, 2015

Gap Analysis - Massing and Height Control Recommendations

Presented by

John ter Borg, B.Eng., MLWS, LEED AP

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We cannot regulate good design but we can regulate building massing. The changes in this proposed bylaw amendment to control massing and height are a watered down version of what was presented at the stakeholder's forum three weeks ago and that study was already limited in clarity and targeting. Half of the controls bundled together in this proposed amendment bylaw relate to attached garages, detached garages, and secondary structures. There is not enough substance provided that will give City plan checking and inspection staff the tools needed to control massing within the house itself.

I. Enforcement Options

Refining massing controls and improving enforcement were both part of City Council's April 20th, 2015 referral motion (Appendix 1). But the issue of enforcement has not been addressed by these proposed Bylaw Amendments.

I will again emphasize my concerns about enforcement. The changes described in the City's massing study and the wording of the proposed Bylaw will not amount to much unless stricter enforcement is also part of the change. Adoption of an internal and external Building Permit checklist with specific drawing detail requirements and an appropriate number of cross-section drawings is essential to controlling the quality of Building Permit submissions. All neighbouring municipalities include one in their submission process and Richmond needs to as well.

Enforcement of City Zoning Bylaws would benefit from a 1-year post occupancy inspection for all new houses, an enforcement practice that is also utilized by neighbouring municipalities.

The City has within its powers the ability to conduct random and independent audits on all houses and especially those that may be suspected of aftermarket infill and modifications. This should become a formal practice in Richmond.

Design Drawing Checklist and Documentation

The attached survey of Richmond's neighbouring municipalities takes a look at the minimum level of Building Permit Application drawing detail documentation and that is required by each municipality (Appendix 5a). The study reveals that Richmond's inadequate level of drawing detail and limited cross-section drawings have directly contributed to the unnecessary massing experienced in new houses.

Checklist requirements when used in conjunction with municipal Bylaws are particularly helpful in reducing void spaces, cavities, and controlling unnecessary building massing. The City of Richmond can easily enforce the intent of the Zoning Bylaw by simply instituting an external and equal to the internal drawing requirement checklist as all neighboring municipalities have done. This change is needed today and speaks directly to enforcement options required by Council's April 20th, 2015 referral motion.

II. Proposed Bylaw Amendments

The images in Appendix 3a. show how a double height floor area located at the back and in the center of a house contributes directly to massing that is experienced in rear yards. These images show houses that back on to public parks or lanes, but this is also happening within subdivisions. The massing is not obvious when viewing from the street but the direct impact on neighbouring backyards is severe.

Proposed Amendment Bylaw option 9265 that sets the double counting floor area standard at a generous height of 12.1 feet is needed. Bylaw option 9266 maintains the status quo with 16.4 feet storey heights, and Bylaw option 9249 is too complex and the only option with the floating 'free' space and will be a challenge for plan checking staff to administer and difficult for inspectors to enforce on site. Uncounted, free or 'bonus' double height floor areas contribute directly to unnecessary massing in houses. The 160 ft^2 'free' extra double height space proposed in this Amendment Bylaw is not acceptable. This was not what was presented to Richmond's Advisory Design Panel and it was not an acceptable change to what minimal citizen input was allowed by the City's limited process. This gift cannot be accepted within an exercise that purports to eliminate unnecessary massing.

The single height control that is described by Bylaw option 9265 (no 'bonus' was included) is needed to provide clarity in design, construction, and enforcement.

Voids and cavities contribute to unnecessary massing

The incentive to build massive second floors in new houses also applies to 2.5 storey houses. The third storey of a 2.5 storey house is limited to a maximum of 50% of the floor below. The incentive is for 2nd floor areas to be as large as possible. This creates a driver that contributes to voids and cavities in the lower floors that are unnecessary and which can be easily filled-in post occupancy (images in Appendix 3b.).

The construction of double height floor areas within the middle of houses also contributes to unnecessary voids and cavities. Because much of the building mass is moved up to the second floor of houses in order to tie-in to the double height areas, this pushes the two storey high external walls out to the property lines. When this is combined with the Bylaw's current 20 foot rear yard setback neighbours have little relief and their rear yard privacy and livability is compromised. Just imagine having one of these buildings looking over your back fence.

Residential Vertical Lot Envelope

The changes proposed to the residential vertical lot width envelope without adding the items for "future considerations" amount to tinkering and do not provide enough of the required massing control that is needed by approvals and inspection staff (Appendix 4.).

This is explained by looking at the Allowable Floor Area Ratio (FAR) for houses in residential Richmond which is set at 55% (on first 5,000 ft2) + 30% on the remaining lot area. As well as the Maximum Buildable Site Coverage that is set at 45% of the lot. If the allowable FAR (55%) is placed on first level of the house and the allowable lot coverage is 45% that leaves only the 10% remaining FAR to spread over the 2nd and 3rd floors. But this is not what is observed in Richmond

today, as new houses climb so high that they project into and even mimic the appearance of these maximum envelope outlines (Appendix 2a).

III. Implementation of Future Proposed Changes

The massing study presented by City staff describes proposed future amendments to control height and massing. The rear yard setback and the 80% 2nd storey controls that were removed from the massing study need to be part of any approved massing and height control bylaw amendments and implemented as they are described in the study. (Appendix 5a/b).

These controls are overdue and the changes are required now, and should not be delayed. We need a commitment from Council to include these changes within the approved amendments and a confirmed timeframe for doing so.

How are we to expect that construction will be monitored and evaluated? What are the metrics that we will use to evaluate any changes in the future? In addition to approving the proposed amendment bylaw, these two additional controls need to be included as amendments as soon as possible. These changes will have real positive implications for managing massing of new houses today and the livability of neighbours and communities tomorrow.

a) Maximum Building Depth (50% of lot depth)

Introduces a flexible and fair control that speaks to the needs of a respectful rear lot setback. One that also increases and decreases with the size of a lot.

b) Secondary Vertical Building Envelope Articulation (second storey floor area is 80% of the first storey)

Introducing a limit to the 2nd floor area that is 80% of the first floor area is a helpful control that pushes the massing of a new house towards the ground floor where it is most appreciated. This will also reduce the opportunity for post-occupancy fill-ins and outdoor patio spaces becoming walled interiors and should be implemented immediately (Appendix 3b).

IV. City of Richmond Advisory Design Panel (ADP)

In a previous Planning Committee Meeting on May 20th, 2015 I made a recommendation that would increase transparency around the City of Richmond's use of the Advisory Design Panel. I appreciate that City has started to implement these changes by adding the terms of reference and mentioning the existence of the ADP on the City website's online listing of advisory boards and committees.

http://www.richmond.ca/cityhall/council/boards/advisory.htm

But for citizens to be kept well-informed on the workings of City Hall the listing of names of active members, meeting minutes, and the ADP meeting calendar should also be included. Other municipalities have been able to achieve this and it is important. Members of the Advisory Design Panel are appointed by Council to undertake objective reviews on behalf of Council, staff, and the public. Transparency and accountability are essential to this community role and for the important work that members are providing to protect the public interest in matters relating to Richmond's physical environment.

Appendices

1) City Council's April 20th, 2015 Referral Motion
2) Comparison of local Municipal minimum requirements
   Building Permit Application Details – Design Drawing Checklists
3) Example Pictures
   a. Double height rooms contribute to massing in the back of houses
   b. Cavities and voids contribute to massing on upper levels
4) Vertical Lot Envelopes – current and proposed
5) Implementation of proposed future changes required now
   a. Maximum Lot Depth
   b. Envelope Articulation

Appendix 1

In response to a query from Council, Mr. Craig advised that the proposed amendment would require that multi-pitched roofs with any flat portion be measured to the peak of the flat portion. He further advised that, under the proposed amendment, buildings would not be permitted to exceed the maximum height of 7.5 metres for any flat-roof portion of the structure.

As a result of the discussion, the following **amendment** was introduced:

PH15/4-9 It was moved and seconded

That Resolution PH15/4-8 be amended by adding the following as Part 4:

> ***"That staff investigate the regulations related to the height and design of accessory buildings."***

The question on Resolution PH15/4-9 was not called as staff was directed to examine the past 20 years of the City's zoning regulations related to accessory buildings. The question on Resolution PH15/4-9 was then called and it was **CARRIED**.

Resolution PH15/4-8 as amended by Resolution PH15/4-9 now reads as follows:

"(1) That staff investigate options to better control issues related to overall building massing and construction of high ceilings, including but not limited to:

(a) what other municipalities are doing;

(b) enforcement options; and

report back through Planning Committee;

(2) That staff consult with stakeholders, residents, architects and home designers on the matter;

(3) That staff refer the matter to the Richmond Advisory Design Panel for analysis and comment; and

(4) That staff investigate the regulations related to the height and design of accessory buildings."

With the aid of a PowerPoint presentation, John ter Borg, 5860 Sandpiper Court, raised concerns regarding building massing and read from a written submission (attached to and forming part of these minutes as Schedule 15).

Kathryn McCreary, 7560 Glacier Crescent, spoke to concerns with respect to massing, great rooms, and excessive ceiling heights and read from a written submission (attached to and forming part of these minutes as Schedule 16).

Mayor Brodie acknowledged the conclusion of the first round of speakers. Speakers then addressed Council for a second time with new information.

Lynda ter Borg was of the opinion that the interests of future generations must be protected and referenced an article by Peter A. Allard (refer to Pages 30 to 34 of Schedule 14).

Kathryn McCreary spoke to the rationale in permitting the demolition of homes 10 years young in light of the City's efforts to reduce, reuse, and recycle.

Appendix 2

Comparison of Local Municipal Requirements
Building Permit Application - Drawing Detail Checklists

Date: June 16, 2015
Prepared by: John ter Borg
B.Eng., MLWS, LEED AP

Description:

A survey of Richmond's neighbouring municipalities identified the following guidelines and accompanying checklists that explain the minimum Building Permit application requirements to be used in conjunction with the municipal Bylaws. This comparison presents the minimum level of detail required by each municipality with the understanding that additional drawings and information may be required prior to processing.

Drawing detail requirements are often described by similar wording that is to have the effect of enabling the timely processing of the Building Permit application:

1. The checklist must be completed by Building Permit applicant.
2. Boxes are checked to verify that requirements are met.
3. The checklist is to be submitted with Building Permit application.
4. The requirements set out in the checklist need to be met; otherwise the application may/will be rejected.

It is further noted that the checklist does not include all the requirements in the Zoning Bylaw. The Designer is required to refer to the Zoning Bylaw for all applicable requirements. If you cannot prepare acceptable drawings yourself, please retain the services of a qualified designer.

Note:

The shaded checklist requirements are particularly helpful in reducing void spaces, cavities, and controlling unnecessary building massing. Richmond's inadequate level of drawing detail and limited cross-section drawings contribute to unnecessary massing in new houses. The City of Richmond can enforce the intent of the Zoning Bylaw by simply instituting a drawing requirement checklist as all neighboring municipalities do.

	Building Permit Guidance (1)	Vancouver	Delta	Burnaby	Surrey	New Westminster	Richmond
1	scale requirements	✓	✓	✓	✓	✓	✓
2	BP application questionnaire					✓	
3	BP application checklist	✓	✓	✓	✓	✓	
4	BP application guide			✓	✓	✓	✓
5	zoning bylaw checklist			✓			
6	site synopsis		✓	✓			
7	lot area and zone		✓			✓	
8	FSR calculation, statement	✓	✓	✓	✓	✓	
9	building site coverage	✓	✓		✓	✓	
10	impermeable surfaces and landscaping coverage	✓	✓				
11	minimum and proposed setbacks		✓				
12	maximum and proposed building height, calculations		✓			✓	
13	floor area of each floor and any area permitted to be excluded		✓				
14	documentation checklist			✓			
15	drawing checklist			✓			
16	sample drawing	✓		✓			✓
	Drawing Plans - Specific Requirements (2)						
	Site Plan	✓	✓	✓	✓	✓	✓
17	legal description and civic address	✓	✓	✓	✓	✓	
18	ultimate property lines	✓	✓		✓		
19	type of residence (single family, duplex)			✓			
20	north arrow	✓	✓	✓	✓	✓	
21	site dimensions per the survey	✓	✓	✓	✓	✓	
22	streets and lanes (named)	✓	✓	✓	✓	✓	
23	easements, right-of-ways, water courses, tops of bank, restricted covenants	✓	✓	✓	✓	✓	
24	locations of services at property lines (offsets shown), invert elevations, available water pressure	✓	✓	✓	✓	✓	
25	overall building dimensions of both principal and accessory buildings	✓	✓	✓	✓		
26	Riparian setbacks		✓	✓			
27	distance of all building setbacks measured perpendicular to property lines (front, rear, and side yard setbacks)	✓	✓	✓	✓	✓	
28	distance between principal building and accessory buildings	✓		✓	✓		

29	existing and finished grades at all corners (buildings, property, retaining walls (top and bottom))	✓	✓	✓	✓	✓	
30	crawl space, cellar/basement and accessory building floor slab elevation (MBE), GSC elevation	✓	✓	✓			
31	overall building height (roof ridge elevation)		✓	✓	✓	✓	
32	window wells, patio wells, non-permeable surfaces	✓	✓	✓		✓	
33	driveway(s) and crossing(s) including width and distance from side property lines, elevations and slopes	✓	✓	✓	✓	✓	
34	tree locations, size and protection measures	✓	✓	✓	✓		
35	zoning and zoning summary. Summary of all calculations (FAR), site area, building area	✓	✓	✓	✓	✓	
36	Reference to climatic design criteria (snow loads) BCBC		✓	✓			
37	Parking space requirements, access, width, spaces, for secondary suites	✓	✓	✓		✓	
38	storm sewer sump; rock pit; septic tank and field layout, ditch locations and inverts	✓	✓	✓	✓	✓	
39	vision clearance at street and/or lane intersections			✓			
40	lot grading and drainage (existing and proposed)					✓	
	Building Cross-Section and Detail Drawings	✓	✓	✓	✓	✓	✓
35	floor to ceiling height of all habitable rooms			✓	✓	✓	
36	height of crawlspaces (showing a stepped footing) (area under raised slabs (>4ft) counted as FSR)	✓		✓			
37	elevation at each finished floor, uppermost ceiling, eaves, and roof peak, roof midpoint			✓	✓	✓	
38	cross section through stairs to floor above showing headroom clearance	✓		✓			
39	floor, ceiling, roof and wall assembly details	✓		✓	✓	✓	
40	roof slopes			✓			
41	vaulted areas and adjacent concealed roof spaces	✓		✓			
42	drain tile specifications				✓		
43	height of all 1/2storey or dormers where floor area has a minimum ceiling height of 4 ft	✓					
44	indicate all fire/sound separations between principle dwelling and all secondary suites	✓					
45	footing and foundation wall detail		✓	✓	✓		
46	Cross sections through the entire house relating to the floor plans, roof design and site conditions. Show floor to ceiling heights and list all wall, floor and roof assemblies.		✓				
47	provide cross sections and details for unusual construction situations including vaulted and cathedral ceilings.		✓				
48	provide a separate cross section through the lot and house demonstrating conformance to the vertical building envelope height restrictions		✓				
	Floor, Foundation, and Roof Plans	✓	✓	✓	✓	✓	✓
49	overall building dimensions of both principal and accessory buildings	✓	✓	✓	✓		
50	complete dimensions to all construction (outside of exterior walls, centreline of interior walls)	✓	✓	✓	✓		
51	Foundation for the proposed house, garage, decks		✓		✓	✓	
52	indicate load bearing (shear) walls	✓	✓		✓	✓	
53	crawl space details, access, ventilation	✓			✓		
54	label room use, size, and dimensions including finished and non-finished areas	✓	✓	✓	✓	✓	
55	size and location of stairs, floor, decks, porches, flat roofs, balconies, sundecks, covered decks			✓	✓		
56	size and location of 'open to below' area			✓	✓		
57	size and location of projections, eaves, chimneys, bay windows, vents, concealed spaces, a/c unit, appliances, furnaces	✓	✓	✓	✓	✓	
58	windows and doors including door swings and sizes, skylights, locations and sizes	✓	✓	✓	✓	✓	
59	stairs showing direction of travel and dimensions	✓	✓	✓	✓	✓	
60	direction and sizes of all floor/ceiling/roof structural components, including beams and hangers, seismic design (braced walls) (sealed by P.Eng.)		✓	✓	✓		
61	plumbing fixtures, HWTs, appliances, fireplaces, and heating/ventilation systems	✓	✓	✓	✓		
62	location of hardwired smoke alarms and carbon monoxide alarms	✓	✓	✓			
63	secondary suite detail incorporated in application		✓	✓			
64	section lines (indicate with lines and arrows where cross sections are taken)		✓			✓	
65	construction and finish details					✓	
66	type of heating system, locations, mechanical equipment	✓	✓	✓			
67	framing details of floor system above (beams, columns, joists, bridging, stripping)		✓		✓	✓	
68	outline of roof above including overhangs		✓				
69	for flat roof /roof deck areas, show location of all plumbing vents	✓					
70	details for floor areas that have sloped ceilings - may have to be counted twice	✓					
	Building Elevations	✓	✓	✓	✓	✓	✓
71	exterior finish and cladding materials	✓	✓	✓	✓		
72	window size, type, and direction of opening	✓	✓	✓	✓		

73	existing and finished grades at building corners, geodetic	✓	✓	✓	✓	✓	
74	elevations (inc. building height) at each finished floor, uppermost ceiling, eaves, & roof peaks	✓	✓	✓	✓	✓	
75	roof slopes	✓	✓	✓	✓		
76	spatial separation calculations for each elevation		✓	✓	✓	✓	
77	size and height of aerial trespass if applicable			✓			
78	elevation of mid roof for sloped roofs & of highest roof ridge or peak, height from avg. grade		✓		✓	✓	
79	elevation at the top of the wall under the eaves to calculate exposed building face	✓	✓				
80	proposed building envelope, primary and secondary (measured from the lowest of the four corner elevations of the proposed building)	✓					
81	Indicate location of bay windows, window wells, chimneys, including height to roof ratio	✓				✓	
82	Eave overhang dimension including gutters	✓	✓			✓	
83	elevation of proposed top of concrete around perimeter of the building	✓					
84	location of potential solar hot water heating panel on new homes		✓				
85	dimensions of exterior guards and guard details	✓					
86	porch dimensions and clear height to underside of ceiling	✓					
	Construction Details	✓	✓	✓	✓	✓	✓
83	bedroom windows indicating height from finished floor to window sill and opening vent sizes			✓			
84	typical bay window/window seat/ window well	✓		✓			
85	sloped/vaulted ceilings/roof decks indicating ventilation and insulation requirements			✓			
86	stair details, indicating inner and outer radius of curved stairs, widths, rise, run number of risers, nosings, guards, and handrails, balconies	✓	✓	✓			
87	lintel, beam, post, joist and stud sizes and spacings including lumber grading specifications	✓		✓	✓		
88	engineered structural components (prefabricated trusses, engineered wood members, glass guard, steel beams, shearwall details, hold-downs and connectors under Professional of Record)	✓		✓	✓	✓	✓
89	building envelope details (roofing, cladding insulation, vapour barrier, drainage, cavity, dampproofing, waterproofing)	✓	✓	✓	✓	✓	✓
90	for two family dwellings, party wall from foundation to underside of roof sheathing indicating proposed fire separation and sound transmission rating	✓	✓	✓			
91	crawl space and concealed roof space access and ventilation details		✓	✓	✓		
92	all construction materials	✓		✓	✓		
93	provide door, window, skylight specification demonstrating NAFS compliance			✓			
94	concrete topping (for in-floor radiant heating) where applicable		✓		✓		
Subtotals							
	Drawing Plans - Specific Requirements (2)	60	59	65	52	39	6
	Building Permit Guidance (1)	6	10	9	5	8	3
95	Additional checklist items	40	31	0	4	0	0
	Total - Drawing Detail Requirements	106	100	74	61	47	9
		Vancouver	**Delta**	**Burnaby**	**Surrey**	**New West**	**Richmond**

Source(s):

1 Corporation of Delta - Building Permit Application - Single Family Dwellings - Information Package and Guidelines
http://www.delta.ca/docs/default-source/community-planning-and-development/building-forms/1067-new-sfd-worksheet.pdf?sfvrsn=10

2 City of Burnaby - Building Permit Application Requirements for New Single and Two Family Dwellings
http://www.burnaby.ca/Assets/city+services/building/Brochures+%26+Bulletins/Single+%26+Two+Family+Dwellings/Building+Permit+Application+Requirements+for+New+Single+and+Two-Family+Dwellings.pdf

3 New Westminster - Single Detached & Duplex Residential - Building Permit Application Guide
http://www.newwestcity.ca/database/rte/files/Guide%20to%20Single%20Detached%20and%20Duplex%20Residential%20Building%20Permit%20Application(2)(1).pdf

4 City of Surrey - A Guide to Applying for a Building Permit for a New Single Family Dwelling
http://www.surrey.ca/files/BP_for_New_Single_Family_Dwelling.pdf

5 City of Vancouver - Construction of Outright 1/2 Family Dwelling - Development & Building Application Submission Requir
http://vancouver.ca/files/cov/1and2familyoutright.pdf

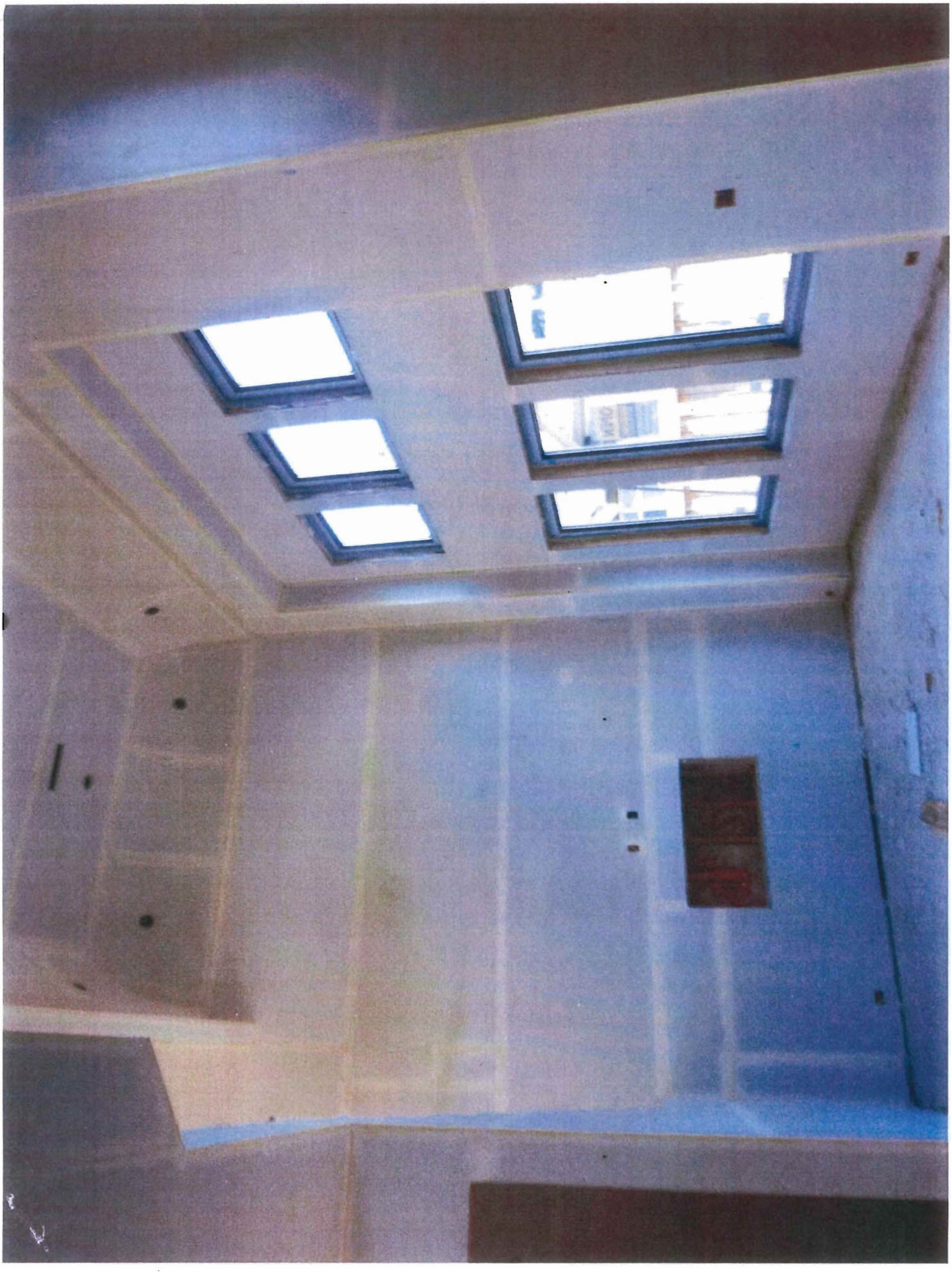
6 City of Richmond - A Guide for the Homeowner/Builder
http://www.richmond.ca/__shared/assets/pc_326229.pdf

Appendix 3 a.


Coleman


9760
Bill Sangha


Tyvek



Appendix 3 b.


Tyvek
DUPONT

7151 Marrington Road, Richmond

March 26, 2015

7151 Marrington Road (back), Richmond

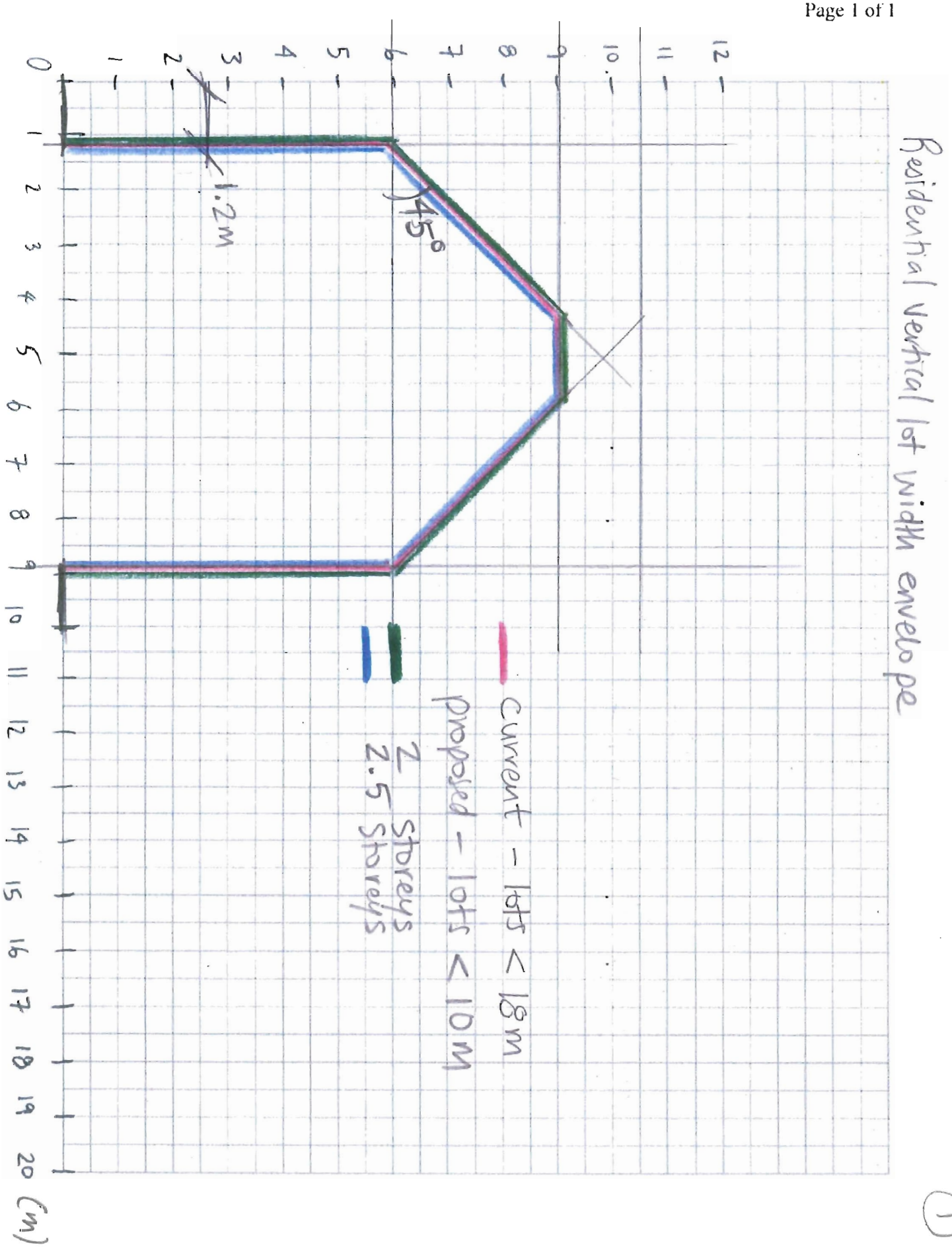
April 1st, 2015

7151 Marrington Road (back), Richmond

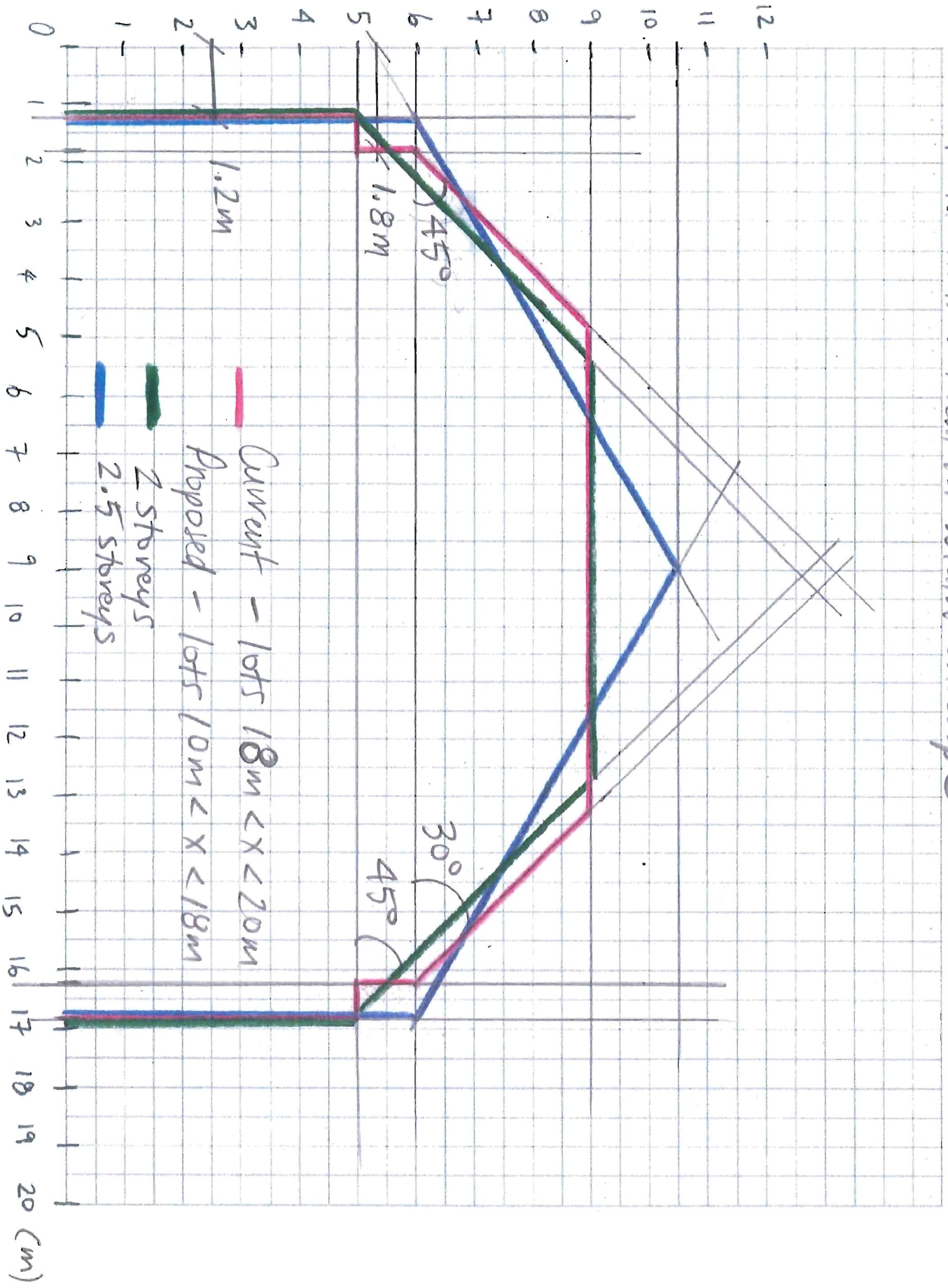
7151 Marrington Road (back), Richmond April 1st, 2015

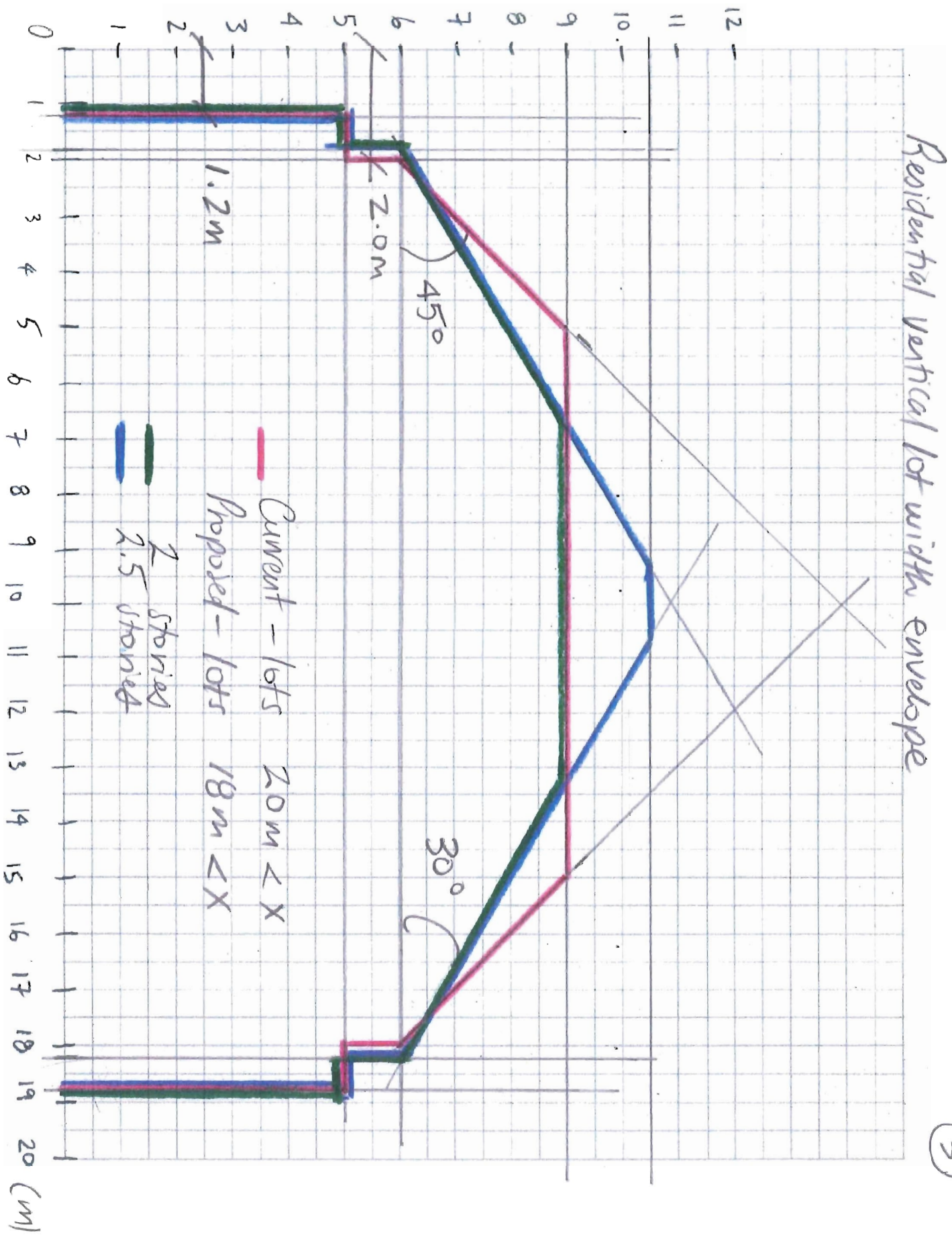
Appendix 4

Residential Vertical lot width envelope



(1)

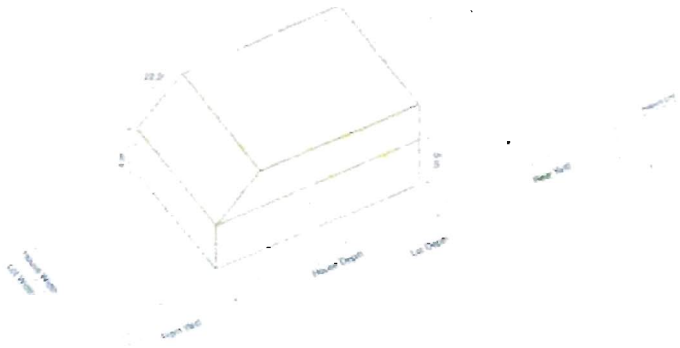

Residential Vertical lot width envelope
Current - lots 18m < X < 20m
Proposed - lots 10m < X < 18m
2 storeys
2.5 storeys
1.2m
1.8m
45°
30°
45°
(m)
2


Residential vertical lot width envelope
1.2m
2.0m
45°
30°
Current - lots 20m < X
Proposed - lots 18m < X
2 stories
2.5 stories
0 1 2 3 4 5 6 7 8 9 10 11 12
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 (m)

(3)

Appendix 5

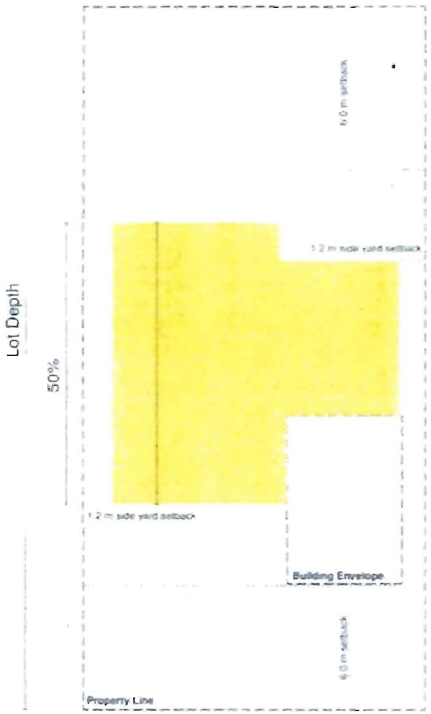
MAXIMUM LOT DEPTH



Maximum Building Depth

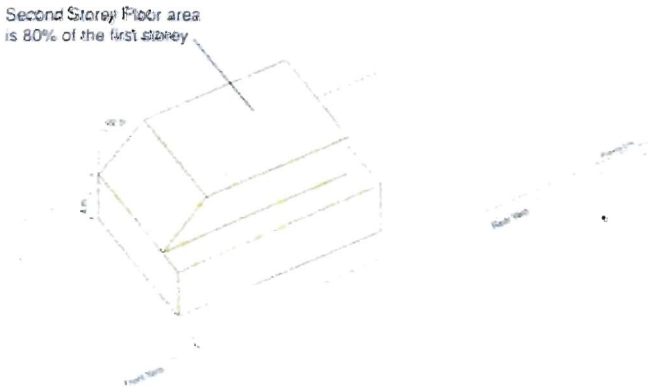
In conjunction with measures defining the Vertical Building Envelope, this measure to control building depth ensures that Floor Area Ratio space preserved by adherence to the maximum height definition of a story does not result in overly deep buildings impacting their side neighbours.

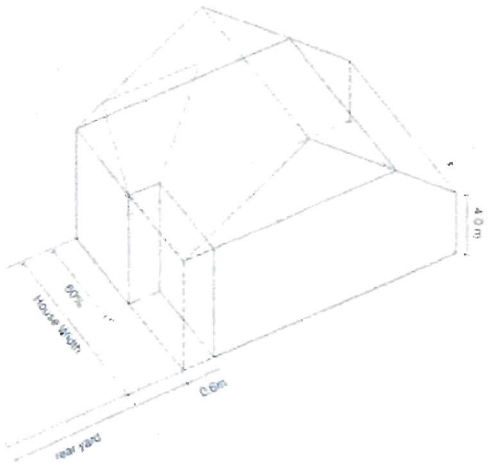
1 **Maximum Building Depth (inhabitable space measured in the direction of the front to rear yard) will be 50% of the Lot Depth.**



Typical House Area

ENVELOPE ARTICULATION





Secondary Vertical Building Envelope

This measure works in conjunction with the buildable volume defined by the Vertical Building Envelope to ensure that there is at least one setback of second floor walls with respect to the first resulting in reducing the number of 2 story walls and letting in more light to the required yards

1 **The Second storey floor area will be a maximum of 80% of the First Storey**

Wall plane Articulation at the Rear Yard

In conjunction with the Vertical Building Envelope, a 2 storey wall at the rear yard setback will have a maximum width of 60% of the total width of the building. To achieve this articulation, a horizontal setback of the remaining vertical plane shall be no less than 6 meters