



# City of Richmond

## Report to Committee Planning and Development Department

**To:** Planning Committee  
**From:** Wayne Craig  
Director of Development

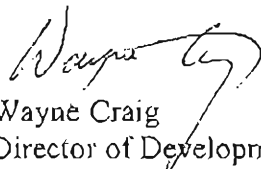
**Date:** December 9, 2013

**File:** AG 13-629877

**Re:** Agricultural Land Reserve Non-Farm Use Application by Louise Noon for  
8160 No. 5 Road

### Staff Recommendation

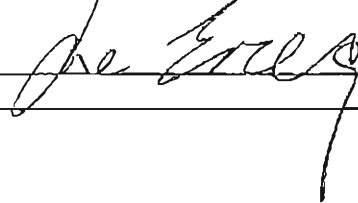
That authorization for Louise Noon to apply to the Agricultural Land Commission for non-farm use at 8160 No. 5 Road to allow for the westerly 93 m (305 ft.) to be used for an educational institution, outdoor religious statue displays and off-street parking and for the consolidation of 8140 and 8160 No. 5 Road into one lot be granted.

  
Wayne Craig  
Director of Development

WC:ke  
Att.

### REPORT CONCURRENCE

#### CONCURRENCE OF GENERAL MANAGER



## Staff Report

### Origin

Louise Noon has applied to the City of Richmond for an Agricultural Land Reserve (ALR) non-farm use application for permission to use the westerly 93 m (305 ft.) of 8160 No. 5 Road for an educational institution, outdoor religious statue display and off-street parking. Consolidation of 8160 and 8140 No. 5 Road is also recommended as part of this proposal (**Attachment 1** – Location Map).

### Proposal Overview

The total area proposed to be utilized for non-farm uses is 3,558 sq. m (38,298 sq. ft.). The remaining area of the site (6,400 sq. m or 68,889 sq. ft.) will be actively farmed as outlined in this proposal. This non-farm use application would also facilitate the consolidation of 8160 and 8140 No. 5 Road, which are both owned by the Thrangu Monastery Association. The existing Thrangu Monastery temple is located at 8140 No. 5 Road and is split zoned “Assembly (ASY)” and “Agriculture (AG1)”. 8160 No. 5 Road was acquired by the congregation to facilitate future expansion of the temple facility; however, this remains a long-term objective and no proposals for temple expansion have been made to the City.

The temple congregation is proposing the following land uses for 8160 No. 5 Road, which require ALR non-farm use approval (refer to **Attachment 2** for a preliminary site plan):

- Educational institution – A farm school facility (261 sq. m or 2,809 sq. ft.) in a purpose-built and designed modular building to be constructed in two phases that can accommodate a total of 60 children.
  - Phase 1 (191 sq. m or 2,056 sq. ft.) to accommodate up to 30 children and other ancillary space.
  - Phase 2 (70 sq. m or 753 sq. ft.) for a second classroom to accommodate 30 additional children.
  - The educational institution is a proposed farm school campus adjunct to the proponent’s existing independent school, which currently operates in Vancouver. The curriculum has been developed with a focus on agricultural education, thus requiring the need for a supporting farm school campus and access to farmland.
- 34 stall parking lot.
  - The west portion of the property currently consists of a paved area (former parking lot). The proponent is proposing modifications to this area to accommodate parking for the proposed school and additional/surplus parking for the temple facility.
- Locate 8 religious statues for outside display along the north edge of the site.
  - Total area of the outside statue display, including observation area, is 353 sq. m (3,800 sq. ft.).
  - Each religious statue will be a total height of 3.89 m (12.8 ft.), which is well below the maximum permitted height for accessory structures. Therefore, no Development Variance Permit will be required.

## Findings of Fact

A Development Application Data Sheet providing details about the development proposal is contained in **Attachment 3**. Currently, the subject site consists of the following uses/activities:

- Front (west) 50 m (164 ft.) portion of the property is an existing paved parking lot area.
- A farm support building was constructed in 2010 and is located approximately 80 m east of No. 5 Road, which will be used to support the proposed agricultural activities on the backlands portion of the site.
- Other uses on the property consist of 6 small greenhouses, which are in the process of being reconstructed and repaired by the proponent.
- Limited agricultural activities have commenced in 4 of the repaired greenhouses and a small vegetable garden has been established at the north east portion of the site.

### ALR Non-Farm Use Application Process

This proposal involves the following application review and processing requirements:

- Submission of an ALR non-farm use application for consideration by Council.
- If endorsed, the ALR non-farm use application is forwarded to the Agricultural Land Commission (ALC) for review.
- The ALC is the decision making authority on all applications forwarded to them.
- The ALC decision on the application is communicated to the proponent and City.

### Forthcoming Rezoning Application

If the ALR non-farm use application is approved, a rezoning application will be required to rezone the area approved for non-farm uses to an appropriate zoning district. The rezoning application will:

- Implement appropriate regulations to allow only the land uses that are approved as part of this ALR non-farm use application. Restrictions on use and density will be examined through the rezoning and will likely be included as part of the zoning to be implemented on the site.
- Retain "Agricultural (AG1)" zoning on the backlands of the property to be actively farmed.
- Prohibit any construction on the site that would be associated with additional temple development.

### 8140 No. 5 Road – Background on Existing Temple Facility

The existing Thrangu Monastery Association temple facility at 8140 No. 5 Road received ALR non-farm use approval in 2005 (AG 04-265790) and rezoning approval in 2007 (RZ 04-279819), which allowed for the temple and supporting parking to location on the westerly 110 m (361 ft.) of the site.

Active farming on the remaining backlands of this site is being undertaken in the form of an orchard (consisting of approximately 90-100 fruit trees and a small amount of berry shrubs) that was planted in 2010. The congregation membership is generally responsible for maintaining the orchard and farm areas. In conjunction with the proposed farm school at 8160 No. 5 Road, continued active farming and maintenance of the fruit orchard at 8140 No. 5 Road by students

through programs and instruction run out of the school will occur and be coordinated with members of the congregation.

#### Future Plans for Additional Temple Development on 8140 and 8160 No. 5 Road

The current proposal for non-farm use at 8160 No. 5 is proposed by the congregation as an interim land use to facilitate limited use and development in conjunction with active farming on the remaining portions of the property. At this time, the Thrangu Monastery Association does not have any immediate plans to expand temple buildings onto 8160 No. 5 Road. If they choose to do so, another ALR non-farm use application and subsequent rezoning application will be required to be submitted and approved through the normal process.

#### **Surrounding Development**

To the North: At 8140 No. 5 Road, an existing building and off-street parking (owned by the same temple congregation) on the front portion of the site and fruit orchard on the remaining portions on a split zoned property with "Assembly (ASY)" zoning on the westerly 110 m (361 ft.) and "Agriculture (AG1)" on the remaining. The area to the north is contained in the ALR.

To the East: An existing "Assembly (ASY)" zoned property at 12300 Blundell Road containing a number of temple related buildings and off-street parking areas. Further east is Highway 99. The area to the east is contained in the ALR.

To the South: An existing temple building and off-street parking on the front portion of the site at 8200 No. 5 Road and farming on the remaining portions on a split zoned property with "Assembly (ASY)" zoning on the westerly 90 m (295 ft.) and "Agriculture (AG1)" on the remaining. The area to the south is contained in the ALR.

To the West: Across No. 5 Road, "Agriculture (AG1)" zoned properties. The area to the west is contained in the ALR.

#### **Related Policies & Studies**

##### 2041 Official Community Plan (OCP)

The land use designations in the 2041 OCP and East Richmond McLennan Sub Area Plan both designate the westerly 110 m of the subject site for Community Institutional uses and Agriculture for the remaining. Please refer to **Attachment 4** for copy of the East Richmond McLennan Sub Area Plan land use map. The proposal for a school, outdoor religious statue display and off-street parking on the westerly 93 m (305 ft.) of the subject site complies with the existing OCP and Sub Area Plan land use designations and no amendment is required.

The subject site has an existing Environmentally Sensitive Area (ESA) designation on the eastern edge of the property (approximately 467 sq. m or 5,027 sq. ft. in area). The proponent is proposing a farm plan that will not encroach into this existing ESA. Staff support this approach as it complies with 2041 OCP objectives of actively farming while also recognizing Ecological Network values on agricultural land.

### No. 5 Road Backlands Policy

The No. 5 Road Backlands Policy was approved by Council March 27, 2000 (refer to **Attachment 5** for a copy of the Policy). The provisions of this Policy allow for land uses permitted in the “Assembly (ASY)” zoning district and consistent with the Community Institutional 2041 OCP land use designation on the westerly 110 m (361 ft.) of the property. All proposals for lands subject to the Policy are required to:

- Submit farm plans for approval;
- Enter into legal agreements as deemed necessary to restrict uses to farm activities only on the site’s backlands.
- Submit an acceptable bond/security to ensure implementation of the farm plan.

The proposed non-farm use application outlined in this report complies with this Policy. The farm plan proposed for the backlands is discussed in later sections of this report.

### **Consultation**

#### Agricultural Advisory Committee (AAC)

The AAC reviewed the subject ALR non-farm use application on July 18, 2013 (refer to **Attachment 6** for an excerpt of the meeting minutes). The AAC supported the application as follows:

*That the ALR non-farm use application at 8160 No. 5 Road be endorsed by the AAC, subject to:*

- *Consolidation of 8160 and 8140 No. 5 Road into one development parcel.*
- *Securing the appropriate legal agreement to ensure no temple related development beyond what is permitted in the City’s policy.*
- *No further fill activities or pre-load materials be brought or placed on the remaining agricultural portions of the subject site that do not directly support farming.*

Consolidation of 8160 and 8140 No. 5 Road and registration of an appropriate legal agreement to restrict use of the backland portion of the site will be secured through the forthcoming rezoning application. The proponent and their consulting agrologist have confirmed that no fill or related activities (i.e., preload or construction staging) will occur on the remaining agricultural portions of the site as part of this development.

### **Staff Comments**

#### Planning and Land Use

Any conditions or requirements identified in the ALR non-farm use application will be followed-up through the rezoning application to ensure they have been completed and/or secured. No rezoning application has been submitted to the City for review; however the proponent is working to submit the application in the near future.

#### Engineering and Transportation

Engineering and Transportation staff have no objections to the ALR non-farm use application. All remaining technical and servicing issues, including any required upgrades, will be addressed through the forthcoming rezoning application. A 4 m dedication along the subject site’s entire

No. 5 Road frontage will be required at rezoning, which has been communicated to the proponent. This dedication has been included in the existing development plans.

### **Analysis**

#### Agrologist Report – Proposed Farm Plan

A professional agrologist undertook an agricultural assessment of the subject site and developed a farm implementation plan for the portions of the property to be farmed. A copy of the site's farm plan is contained in **Attachment 7**. The supporting agrologist report is contained in **Attachment 8**.

A primary curriculum objective of the proposed school is to integrate instruction on ecology in a working farm context. The agrologist's report has been prepared based on the proponent's proposal of integrating the curriculum of the proposed school with the operations of a small scale commercial farm.

Student involvement in the farm operations is proposed as follows:

- Planting and growing of suitable crops for the site.
- Maintenance, pruning and harvesting activities.
- Through instruction and supervision, familiarize themselves with typical farm tools, equipment and organic agricultural practices.
- Gain experience in commercial activities and managing the revenue generated from sale/marketing of the agricultural produce.

The farm plan is summarized as follows:

- Site preparation activities involving tillage of soils and running irrigation lines (existing) to service the tilled areas fruit trees crops will be planted.
- Repair and upgrade the 6 existing small greenhouses on the agricultural backlands.
- Plant a variety of fruit trees, berry shrubs and annual vegetables on the agricultural backlands in accordance with the plan.
- Preserve the ESA at the east portion of the site. All proposed works to implement the farm plan will not impact the existing on-site ESA.

The proponent's consulting agrologist has identified that the proposal will cost approximately \$10,000 to undertake all necessary site preparation works, plant materials and installation. Staff recommend that a bond in the amount of \$10,000 be secured through the forthcoming rezoning application process to ensure implementation of the farm plan. The anticipated terms of the farm bond (to be finalized through the rezoning) will require confirmation that the agricultural backlands are in full farm production, which must be verified by a report submitted from their consulting agrologist prior to release of the bond.

#### Adjacency Between the Proposed Non-Farm Use and Farm Areas

Development of a specific landscape buffer treatment between the proposed farm school campus and agricultural activities is not necessary given the linkages and required interaction between these two land uses. An existing farm support building is located between the school and active farm areas and the eastern most extent of the school is approximately 20 m (66 ft.) from the

active farm areas. As a result, no landscape buffer treatment is necessary to separate the proposed school, parking and outdoor statue display area from the agricultural backlands.

#### Assessment of Proposed Additional Parking and Outdoor Religious Statue Display Activities

The additional parking area is intended to service the proposed school and to also provide additional off-street parking for the temple. The existing temple facility at 8140 No. 5 Road provides off-street parking in accordance with Zoning Bylaw 8500. The parking proposed on 8160 No. 5 Road would provide a total of 34 stalls, with 9 stalls dedicated to the school.

The 8 religious statues will all be located outside and no additional temple building area is required. The religious statues are an accessory component of the temple and are located in an area that will enable access to the congregation.

The consolidation of 8140 and 8160 No. 5 Road into one development parcel will facilitate the implementation of driveway and pedestrian access between the two sites.

#### Items to be Addressed Through the Rezoning Application

If the ALR non-farm use application is endorsed by Council and approved by the ALC, the following items will need to be addressed and/or secured through the rezoning application:

- Secure the consolidation of 8140 and 8160 No. 5 Road, including all necessary land dedication requirements.
- Finalize all engineering and transportation requirements including any necessary frontage improvements and infrastructure upgrades.
- Develop and finalize the zoning regulations to be applied to the subject site.
- Development of more detailed building information on the proposed farm school.
- Secure a bond (\$10,000 or other amount deemed sufficient by the ALC) to ensure implementation of the farm plan as proposed.
- Secure an appropriate legal agreement to ensure that the agricultural backlands will only be utilized for farm activities and supporting uses only and that no temple related development will occur.
- Follow-up on any other applicable conditions identified by the ALC as part of their consideration and approval of the ALR non-farm use application.

#### **Financial Impact or Economic Impact**



None anticipated.

#### **Conclusion**

The following ALR non-farm uses are being proposed through this application:

- Educational institution (farm school) campus in a 261 sq. m (2,809 sq. ft.) purpose built modular structure.
- Outdoor religious statue display.
- 34 stall parking lot to support the educational institution and serve as additional surplus parking for use by the temple.

Implementation of a farm plan in conjunction with the operation of the proposed school is also included in this proposal. Staff support the ALR non-farm use application at 8160 No. 5 Road and related consolidation of 8140 and 8160 No. 5 Road and recommend that Council authorize the application to be forwarded to the ALC for consideration.



Kevin Eng  
Planner I

KE:cas

- Attachment 1: Location Map
- Attachment 2: Preliminary Site Plan
- Attachment 3: Development Application Data Sheet
- Attachment 4: East Richmond McLennan Sub Area Plan – Land Use Map
- Attachment 5: No. 5 Road Backlands Policy
- Attachment 6: Agricultural Advisory Committee Meeting Minutes (July 18, 2013)
- Attachment 7: Farm Plan – Site Plan
- Attachment 8: Agrologist Report



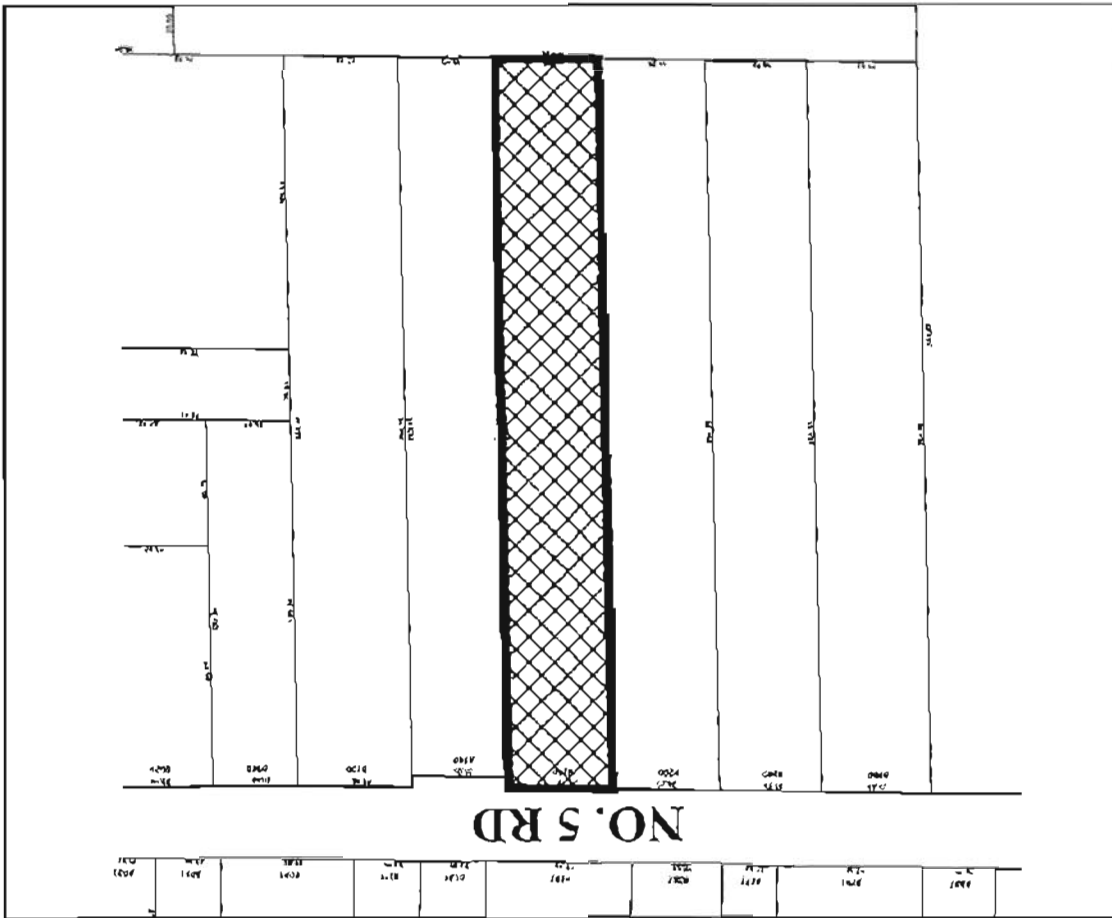
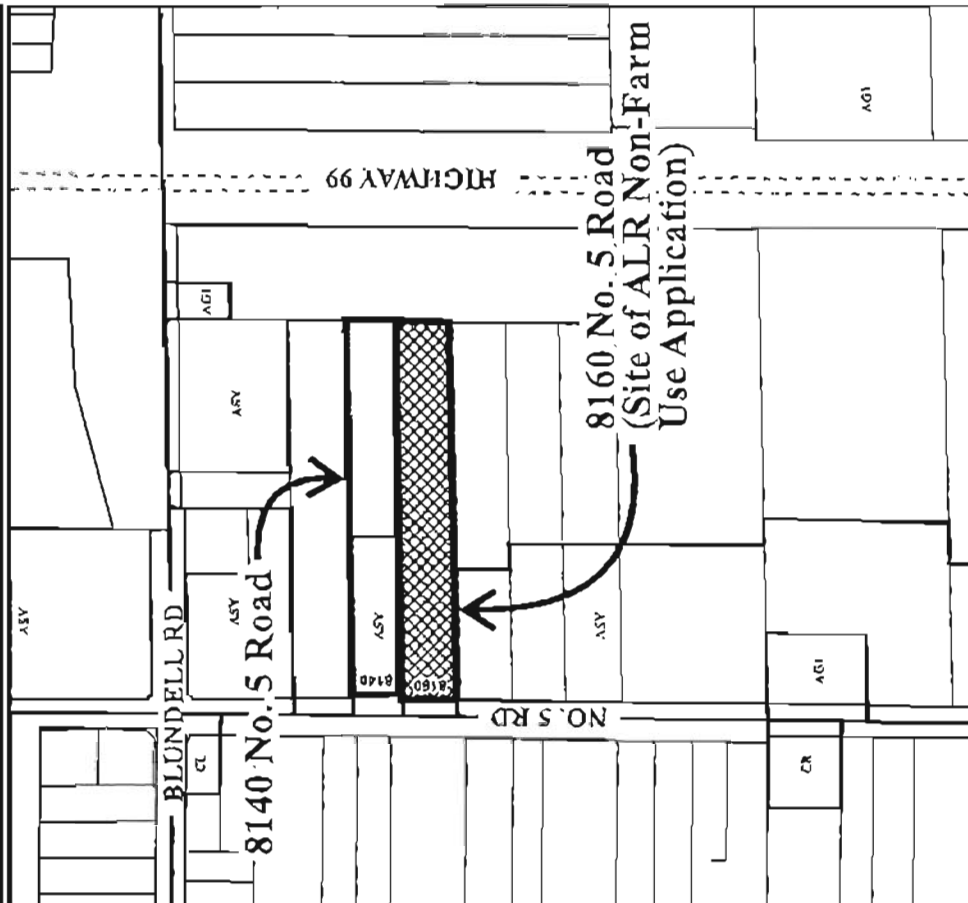


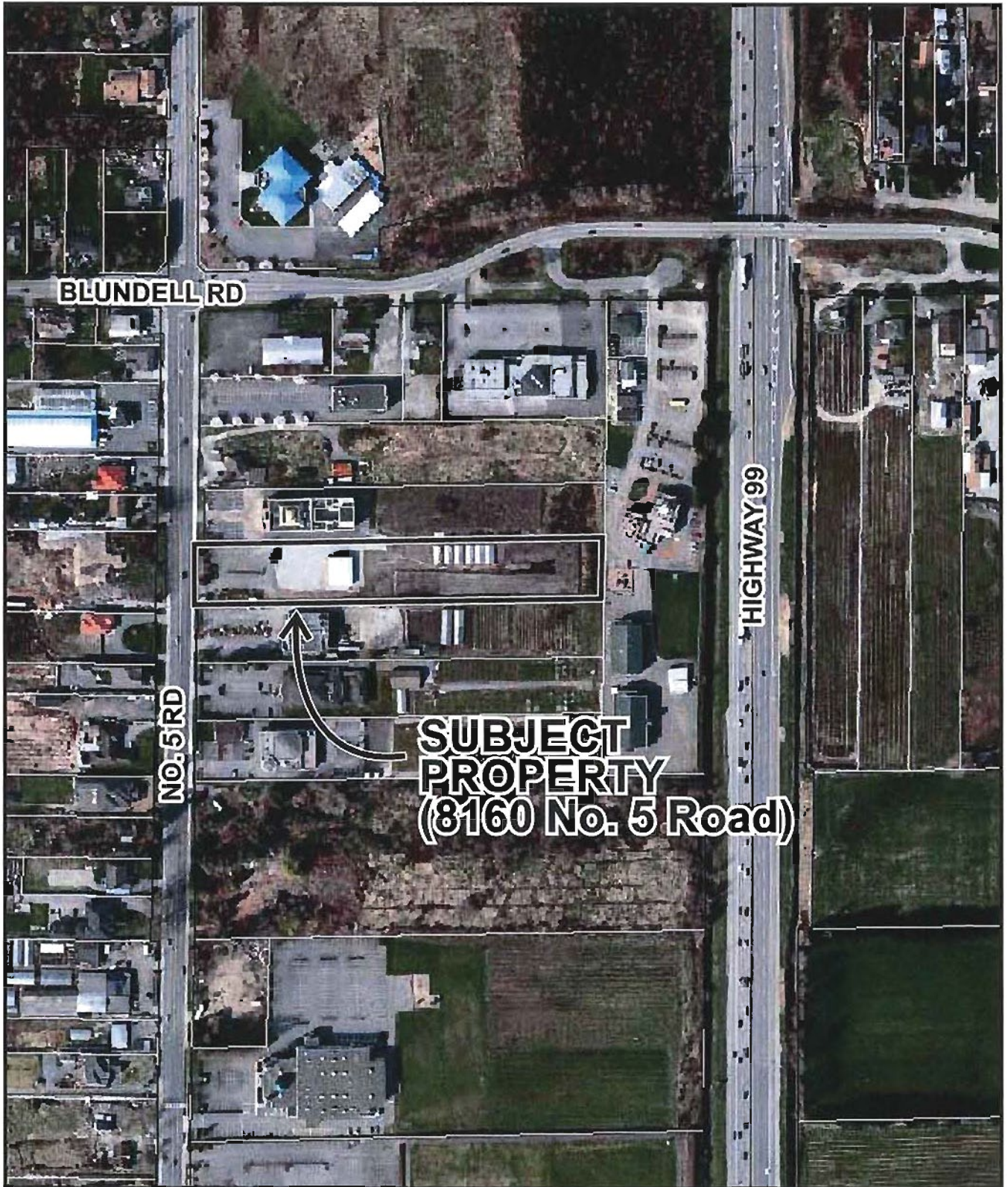
Original Date: 02/21/13  
Revision Date: 11/29/13  
Note: Dimensions are in METRES

AG 13-629877



City of Richmond





AG 13-629877

Original Date: 02/21/13

Amended Date: 11/29/13

Note: Dimensions are in METRES





**FALSE CREEK DESIGN GROUP LTD.**  
1003 Main Street  
Vancouver, BC V6A 2Y1 CANADA  
P 604.683.3111 F 604.683.3333

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DATE: 14/02/2013  
BY: [Signature]  
CHECKED BY: [Signature]  
APPROVED BY: [Signature]

PROJECT NO: 1003  
PROJECT NAME: THURANGU MONASTERY  
PROJECT LOCATION: 8160 NO. 5 ROAD, RICHMOND B.C.  
PROJECT STATUS: PRELIMINARY  
PROJECT DATE: 14/02/2013

**THURANGU MONASTERY**  
8160 NO. 5 ROAD  
RICHMOND B.C.

DATE: 14/02/2013  
BY: [Signature]  
CHECKED BY: [Signature]  
APPROVED BY: [Signature]

**8160 NO. 5 RD  
SITE PLAN &  
SITE AERIAL**

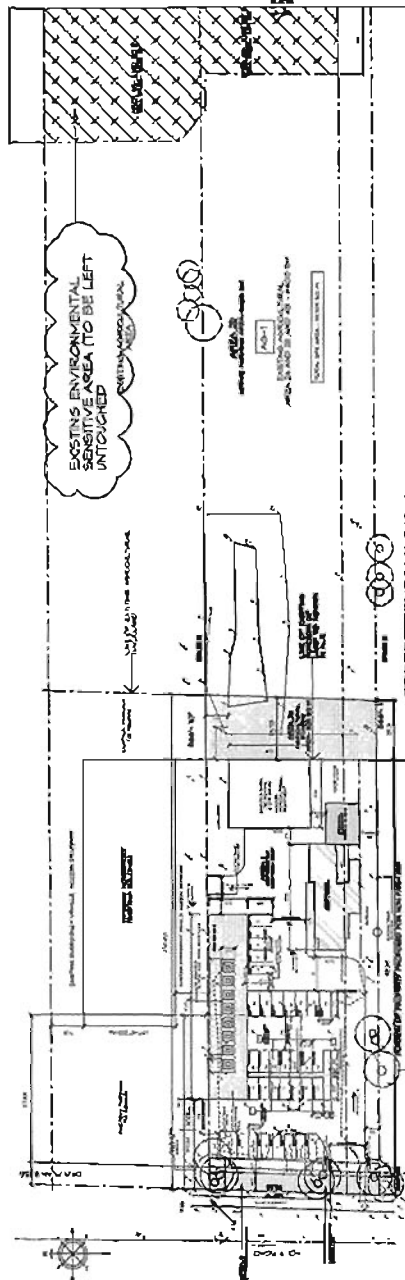
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PROJECT NAME: THURANGU MONASTERY  
PROJECT LOCATION: 8160 NO. 5 ROAD, RICHMOND B.C.  
PROJECT STATUS: PRELIMINARY  
PROJECT DATE: 14/02/2013

# PRELIMINARY SITE PLAN

## ATTACHMENT 2



**AERIAL PHOTO (ADJACENT LAND USES INDICATED)**  
SCALE 1:500



**SITE PLAN**  
SCALE 1:500



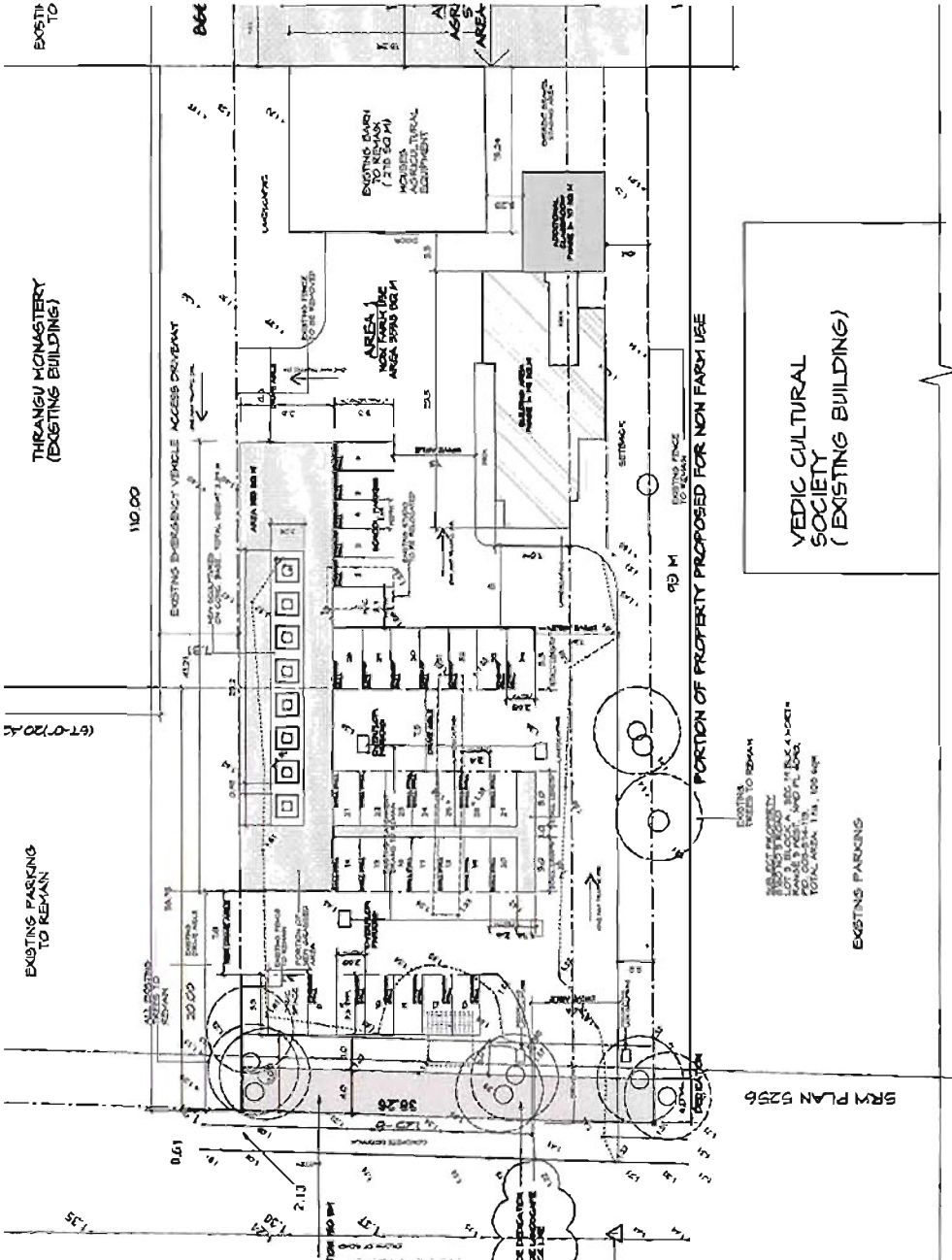
PHOTO A



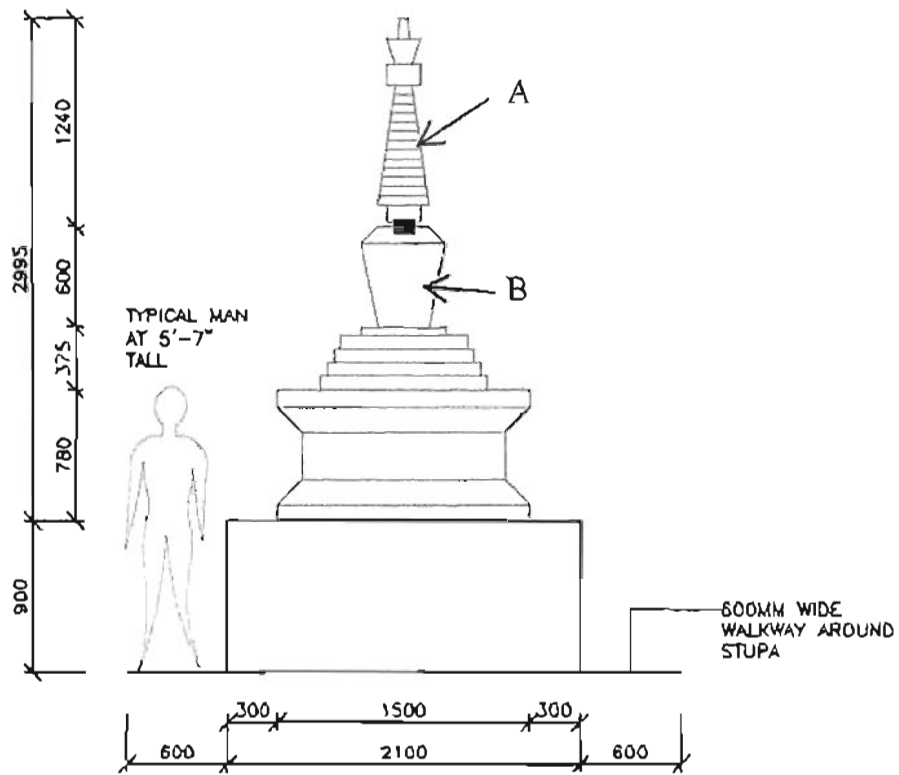
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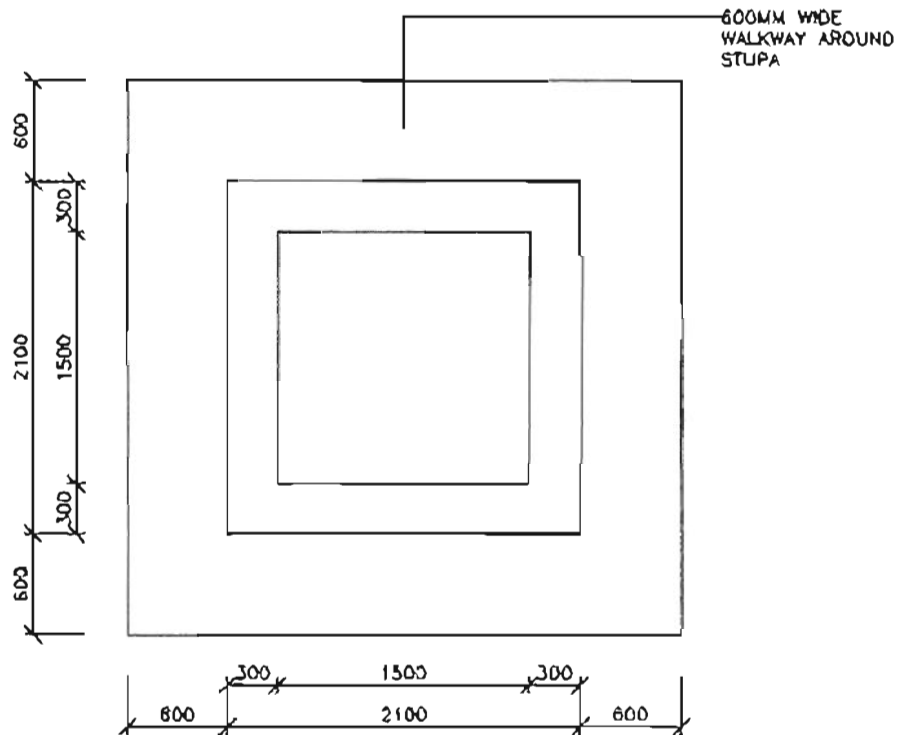
PHOTO C



○ SITE PLAN (DETAIL)  
SCALE 1:250



STUPA ELEVATION 1:50



STUPA BASE SIZE 1:50



**AG 13-629877**

**Attachment 3**

Address: 8160 No. 5 Road

Applicant: Louise Noon

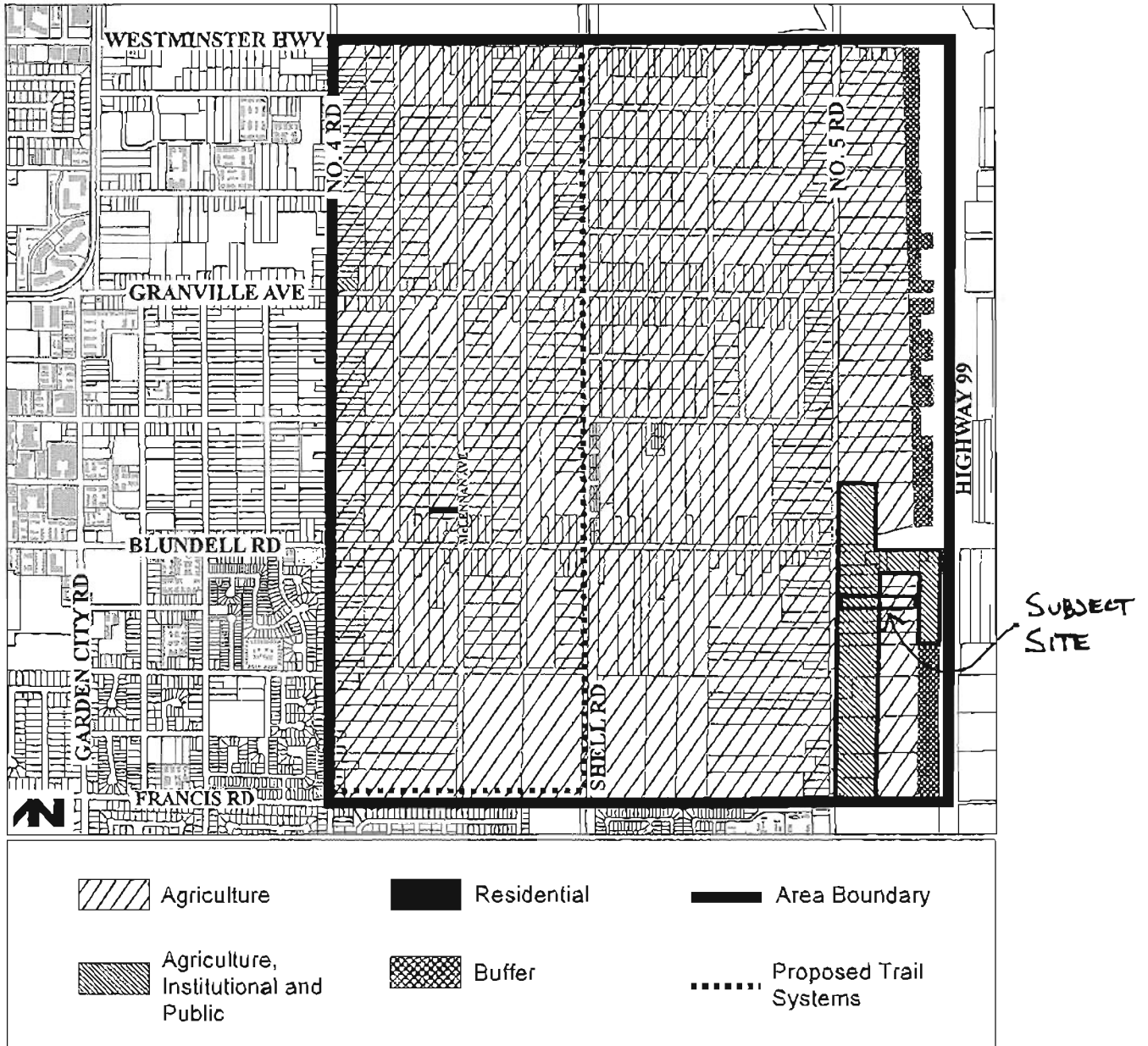
Planning Area(s): East Richmond McLennan Sub Area Plan

	Existing	Proposed
Owner:	Thrangu Monastery Association	No Change
Site Size (m <sup>2</sup> ):	10,108 m <sup>2</sup>	Approximately 9,958 m <sup>2</sup> (after 4 m road dedication)
Land Uses:	Currently vacant with a supporting farm building, small scale greenhouses and previous old paved parking lot on western portion of the lot.	On the westerly 95 m of the site: <ul style="list-style-type: none"> <li>• Educational institution (261 sq. m).</li> <li>• 34 stall off-street parking lot.</li> <li>• 8 outdoor religious statues.</li> </ul> Active farming (annual vegetable crops, fruit trees and small scale greenhouse production) on the remaining agricultural backlands portions of the site.
OCP Designation:	<ul style="list-style-type: none"> <li>• Community Institutional on the westerly 110 m.</li> <li>▪ Agriculture on remaining.</li> </ul>	No change – Proposal complies with designation.
East Richmond McLennan Sub Area Plan Designation:	<ul style="list-style-type: none"> <li>• Agriculture, Institutional and Public on the westerly 110 m.</li> <li>• Agriculture on remaining.</li> </ul>	No change – Proposal complies with designation.
Zoning:	"Agriculture (AG1)"	<ul style="list-style-type: none"> <li>• Property to be split zoned to allow non-farm uses on the west portion of the site and retain "Agriculture AG1" zoning on the remainder of the site.</li> <li>• Zoning regulations to be determined through the rezoning application.</li> </ul>
Other Designations:	Environmentally Sensitive Area (ESA) designation on an approximate 467 m <sup>2</sup> area located on the east portion of the site.	No change – The existing ESA will not be impacted by this development.

City of Richmond

# Land Use Map

Bylaw B791  
2012/09/10





## City of Richmond

## Policy Manual

Page 1 of 3

Adopted by Council: Mar. 27/00

POLICY 5037

File Ref: 4105-04

NO. 5 ROAD BACKLANDS POLICY

**POLICY 5037:**

It is Council policy that:

1. The area outlined in bold lines as "Area Proposed for Public and Institutional Use" on the accompanying plan dated 01/24/00 may be considered for non-farm use.
2. The types of non-farm use which may be considered are:
  - "Assembly District" uses, and
  - Certain "School / Public Use District" uses (i.e., public park, public recreation facility, municipal works, health and safety measures, community use).
3. The amount of land on each property which may be developed for approved non-farm uses is limited to the westerly 110 m (360.892 ft) for properties fronting onto No. 5 Road.

The remaining back land portion of each property shall be retained for farm use only.
4. Satisfactory sanitary sewage disposal is required as a condition of Development Permit approval.
5. Continue to strive for a partnership approach, with back land owner prepared farm plans to achieve farming, but allow for a limited infrastructure component (e.g., little or no regional and on-site drainage, irrigation or access roads), where a full infrastructure component is not practical.
6. The current moratorium on non-farm use approvals (initiated by the Land Commission and adopted by Council in February, 1996) should be retained and may be lifted on an individual lot basis for owners who:
  - a) prepare farm plans;
  - b) explore farm consolidation;
  - c) commit to do any necessary on-site infrastructure improvements;
  - d) co-operate as necessary to remove constraints (e.g., required infrastructure) to farming the back lands, in partnership with others; and
  - e) commit to legal requirements as may be stipulated by Council to achieve acceptable land uses (e.g., farming the back lands).
  - f) undertake active farming of the back lands.
7. The following procedure will apply when considering applications for non-farm use and Assembly District rezoning.





## Approvals Procedure

Proponent applies to City and Commission for non-farm use approval.

Commission reviews proposal and may give approval in principle for non-farm use based on the proponent:

- preparing an acceptable farm plan;
- entering into a restrictive covenant;
- providing a financial guarantee to farm; and
- agreeing to undertake active farming first

Proponent undertakes active farming based on the approved farm plan.

Commission gives final approval for non-farm use.

Proponent applies to City for rezoning of site to Assembly District (ASY).

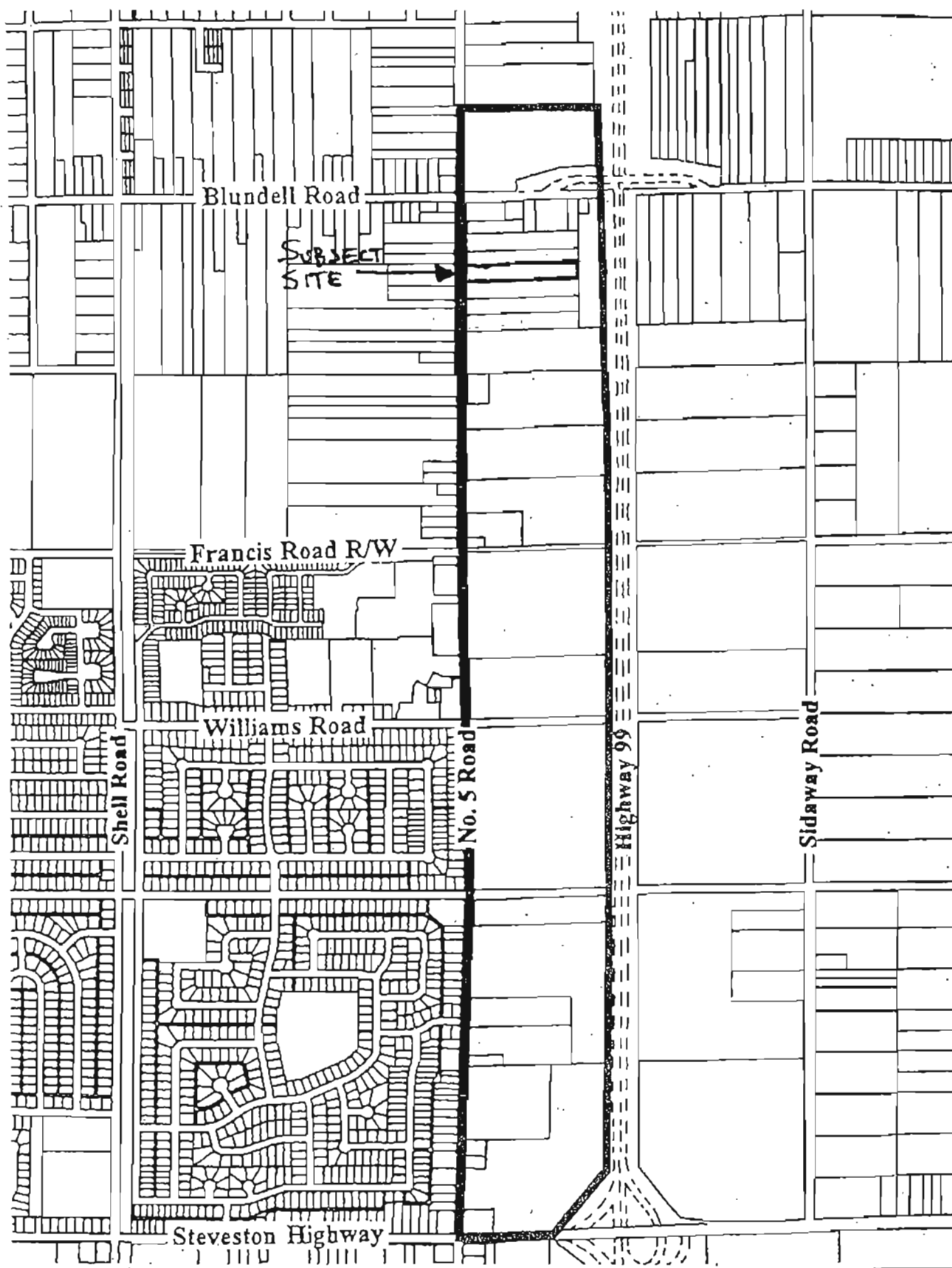
City approves rezoning application after proponent meets all City requirements.

## Amendments to the above policies

If either the City or the Land Commission intends to amend any of the above procedures, the initiating party will advise the other party of this intent and seek comment on the proposed amendments prior to concluding any approvals.

## Co-ordination of review process

The City and the Commission will co-ordinate efforts when reviewing applications for non-farm use, in order to ensure that the interests of each party are addressed. This co-ordinated effort will be done prior to granting any approvals.



Area Proposed for Public  
and Institutional Use

Date:  
01/24/00

PLAN 032



City of Richmond

**Minutes****AGRICULTURAL ADVISORY COMMITTEE (AAC)****Held Thursday, July 18, 2013 (7:00 pm to 9:15 pm)****M.1.003****Richmond City Hall****In Attendance:**

Bill Zylmans (Chair) Todd May; Scott May; Danny Chen; Kyle May; Colin Dring; Krishna Sharma; Steve Easterbrook; Kevin Eng (Policy Planning); Terry Crowe (Policy Planning);

**Regrets:**

Dave Sandhu; Bill Jones; Councillor Harold Steves; Kathleen Zimmerman (Ministry of Agriculture and Lands); Tony Pellett (Agricultural Land Commission)

**Guests:**

Lyle Weinstein; Saeed Jhatam

**1. Adoption of the Agenda**

AAC members adopted the July 18, 2013 AAC agenda.

**2. Development Proposal (ALR non-farm use application) – 8160 NO. 5 Road**

Staff summarized the non-farm use application at 8160 No. 5 Road, which involves the development of interim uses on the front portion of the subject site to accommodate a Montessori facility (with off-street parking), outside temple statues and off-street parking for the neighbouring temple to the north. Staff noted that the Thrangu Monastery Temple association, who have an existing temple facility at 8140 No. 5 Road to the north, also are the owners of 8160 No. 5 Road. Currently, the temple does not have any immediate plans to develop any additional temple facilities on 8160 No. 5 Road, but have forwarded applications for the above referenced interim land uses. A summary was also provided on the submitted agrologist assessment of the subject site and proposed farm activities to be undertaken by the temple and programming being run out of the proposed Montessori facility. Staff noted that preliminary discussions between the temple and the City about consolidation of 8160 and 8140 No. 5 Road had occurred, with the temple being amenable to this requirement.

AAC members had questions about the required parking and traffic studies for temple development along No. 5 Road. Staff confirmed that proposals are checked to confirm adherence with off-street parking requirements of the zoning bylaw and traffic impact assessments are submitted for site's involving temple facility development.

There were general questions about the implementation of the farm plan and what other requirements the City would typically require for these types of proposals. Staff highlighted that bonds would typically be secured to ensure implementation of the farm plan and required landscape buffering. Furthermore, legal agreements would be secured to restrict development on the remaining backlands to farming only.

There were questions on the upcoming application and approval process. As the proposed land uses are considered interim until the temple's ultimate development plans come forward, this specific land use application approach (and subsequent rezoning) will only be permitting the requested interim uses. Additional temple development will require approval through another ALR non-farm use and rezoning application.

The AAC moved and seconded the following motion:

*That the ALR non-farm use application at 8160 No. 5 Road be endorsed by the AAC, subject to:*

- Consolidation of 8160 and 8140 No. 5 Road into one development parcel.*
- Securing the appropriate legal agreement to ensure no temple related development beyond what is permitted in the City's policy.*
- No further fill activities or pre-load materials be brought or placed on the remaining agricultural portions of the subject site that do not directly support farming.*

*Carried Unanimously.*

The proponent (Lyle Weinstein) addressed Committee members and outlined the Montessori program's farming component.

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### **3. Development Proposal (ALR non-farm use application) – 12300 Blundell Road**

Staff noted that the applicant is proposing to build a small extension to the existing main mosque temple (372 sq. m or 4,000 sq. ft.) to accommodate the needs of the growing congregation. A brief history of the subject site and temple development was provided noting that the initial temple and supporting accessory buildings were approved by the ALC in the late 1970's, with construction of the facilities being completed in the early 1980's. The subject site is zoned entirely for Assembly (ASY) purposes; therefore, no rezoning application is required if the ALR application is approved.

When the City was developing the associated No. 5 Road Backlands policy in the early 1990's, the consultant report confirmed that the site had already been zoned for Assembly (ASY) purposes (including on-site temple development) and there had been no legal agreements to farm any portions of the subject site as part of the ALC's approval.

Currently, the subject site contains a main temple assembly hall and other buildings associated with a school run by the proponents and other supporting uses (administrative buildings; off-street parking; school yard). The proponent has confirmed with the ALC that

Revision December 2, 2013.

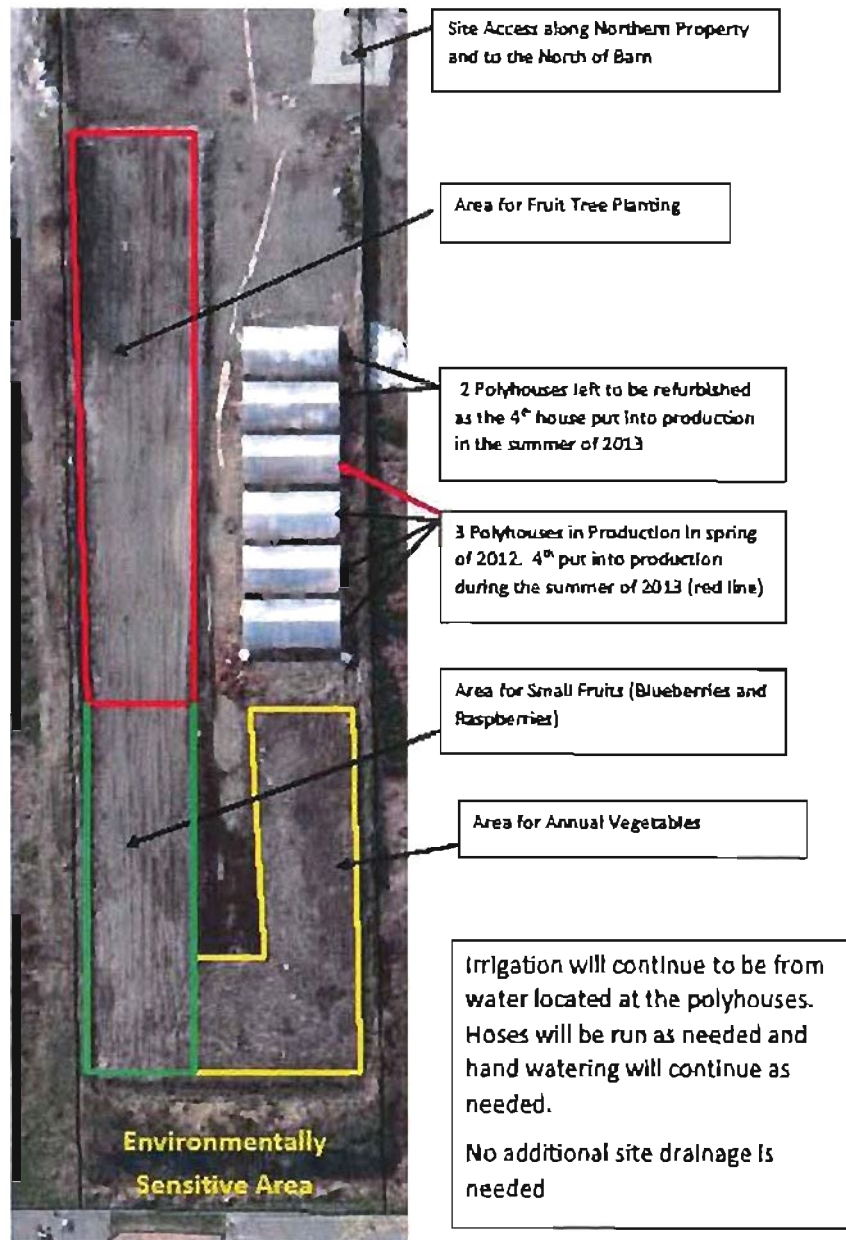


Figure 18 Proposed Farm Layout

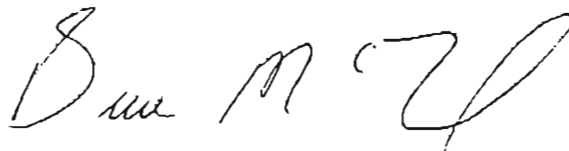
December 2, 2013.

Addendum II  
Agricultural Site Assessment of Land Located at  
8160 No. 5 Road Richmond B.C.  
(Replaces Addendum Oct 4, 2013)

Prepared for:

Thrangu Monastery  
8140 No 5 Road  
Richmond, B.C.

Prepared by:

A handwritten signature in black ink, appearing to read "Bruce McTavish". The signature is fluid and cursive, with the first name "Bruce" written in a larger, more prominent script than the last name "McTavish".

Bruce McTavish, M.Sc., MBA, P.Ag., RPBio.  
McTavish Resource & Management Consultants Ltd.  
2858 Bayview St. Surrey, B.C. V4A 3Z4  
bmct@intergate.ca

November 17, 2013

***Revised December 2nd***

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## 1.0 Introduction

The following report is the second addendum to the Agricultural Site Assessment of Land Located at 8160 No.5 Road Richmond B.C. The report is prepared in response to questions posed by Kevin Eng, from the City of Richmond with respect to the cost of implementing the agricultural plan without the volunteer labour component that was factored into the original costing. This report includes the information provided in the first addendum so the reader has an understanding of the crops and proposed agricultural works.

## 2.0 Works to be Implemented

There are minor agricultural works that need to be implemented these include:

- tilling the raised area on the west side of the property as shown in figure 1;
- provide irrigation to the raised area where the fruit trees will be planted, this can be done by running several hoses from existing hose bibs at the polyhouses area on the west side of the property;
- upgrade the two polyhouses presently not in production
- obtaining and installing fruit trees, small fruits and vegetables



Figure 1: Raised Area In Need of Tilling

## 3.0 Farm Access

Access will be maintained by a roadway a minimum of 3m wide that will run along the side of the proposed new building. This will ensure there is adequate room for small tractors or trucks to enter the farm area in the future.

## 4.0 Proposed Crops

The temple wishes to continue with a similar planting of fruit trees as is presently installed on the eastern portion of the Temple property at 8140 #5 Road which is located to the North of the subject property. Although fruit trees are generally not grown in Richmond, an on-site inspect of the existing orchard indicates that the trees are healthy and bearing fruit. The raised area shown in figure 1 will provide good subsurface and surface drainage which is critical for fruit trees, thus it is recommended that this area be the location of the fruit tree orchard. Although final selection has not been made on the fruit trees, they will be selected for the west coast climate and for fungal disease resistance. The fruit trees will likely include but not be limited to Peaches, Apples, Nectarines and Figs and it is recommended that 5 rows of 10 trees per row be installed for a total of 50 trees.



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The southern portion of the raised area will have raspberries planted as well as a small planting of blueberries with 30 healthy plants presently growing in this area and they will be supplemented with 20 additional plants. The remaining unused polyhouses will be put into production.



Figure 2: Crop Layout

The south-eastern section will remain in annual vegetables as it has been for 2012 and 2013.

The polyhouses will continue to be used for the production of herbs and tomatoes.

## 5.0 Environmentally Sensitive Areas

There is an Environmentally Sensitive Area on the south-western portion of 8140 No. 5 Road that extends onto southern boundary of the subject property as seen in figure 3.



Figure 3: Environmentally Sensitive Areas

The tilling and other agricultural works that are recommended as part of the agricultural activities on this property do not encroach on the ESA area nor will there be any impacts from the agricultural activities on the ESA.

## 6.0 Program Implementation

There are two aspects to the implementation of the agricultural plan for the subject property; the initial work of tilling and planting, followed by the ongoing maintenance and crop harvesting.

The tillage and any other equipment work that may be needed to carry out the recommendations in the report will be contracted out to a local farm contractor with appropriate sized equipment. Planting will be done by volunteers from the temple (however the costing in section 7.0 reflect the in kind value of this labour). It should be noted that there is an existing operation being run by the temple on this site that includes the operation of 4 polyhouses and the production of annual vegetables.

The second phase of the agricultural plan is the maintenance and harvesting of the crops. This will be primarily be done as part of the curricular activities of the students at the school. Training and oversight will be by the staff of the school. Once of the staff has been trained in Biodynamic farming and another is a certified bee keeper. If outside expertise is needed professionals will be hired on an as need basis.

## 7.0 Cost Estimates

The site presently has 4 of the 6 polyhouses in production, and has planted vegetables and small fruits. The overall costs for the agricultural plan are therefore the incremental costs of adding to the existing plantings and upgrading the 2 polyhouses not in production.

The following cost estimate assumes no volunteer labour for planting, cultivation, maintenance, harvesting and upgrading polyhouses in year 1:

• Purchase of fruit trees which will be 50 trees x \$25.00	= \$1250.00
• Purchase of new raspberry canes	= \$ 50.00
• Purchase of 20 new blueberry plants	= \$ 80.00
• Hoses to the fruit trees for hand watering	= \$ 200.00
• Cultivation/tilling fruit tree area tractor + implements 8 hours	= \$ 1000.00
o Includes move in and move out charges	
• Upgrading two remaining polyhouses	= \$2,000.00
• Planting trees, staking trees and planting small fruits	= \$1,000.00
• Purchase of seed or plugs of vegetables and installation	= \$ 500.00
• Management of crops in year 1 including:	
o Fertility	
o Weeding	
o Pruning	
o Watering	
o Harvesting	= \$4,000.00

**Total Estimated Costs     \$10,080**

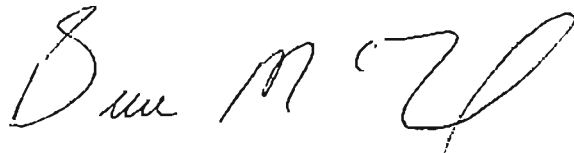
Revision December 2, 2013.

## Agricultural Site Assessment of Land Located at 8160 No. 5 Road Richmond B.C.

Prepared for:

Thrangu Monastery  
8140 No 5 Road  
Richmond, B.C.

Prepared by:

A handwritten signature in black ink, appearing to read 'Bruce MCT', is centered on the page.

Bruce McTavish, M.Sc., MBA, P.Ag., RPBio.  
McTavish Resource & Management Consultants Ltd.  
2858 Bayview St. Surrey, B.C. V4A 3Z4  
bmct@intergate.ca

May 22, 2013  
*Revised December 2, 2013*

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## 1.0 Introduction

McTavish Resource & Management Consultants Ltd. was retained by the Thrangu Monastery to carry out an agricultural assessment on property located at 8160 No. 5 Road Richmond B.C. The purpose of the report is to determine the agricultural capability of the land, and to make recommendations that can be implemented on the subject property, to develop a productive agriculture operation. This report is provided as part of the package for a rezoning application from AG1 (Agriculture) to AGY (Assembly) to build a Montessori school on the west section of the property. It is the owners desire to provide education that is integrated with a commercial food production enterprise.

## 2.0 Site Location

The subject property is located at 8160 No. 5 Rd, Richmond, BC (see figure 1)



Figure 1 Site Location

### 2.1 Zoning and Present Land Use

The subject property is currently designated AG1 in the city of Richmond. The land is currently being used for minor agriculture activities including:

- Three functioning poly houses in the spring of 2013 with a 4<sup>th</sup> put into production in the summer of 2014 used for growing tomatoes and vegetables (see figure 2).
- A small area on the northeast section of the property used to grow kale.
- An assortment of annual vegetable crops.



**Figure 2 Greenhouses on property**

## ***2.2 Land Use Adjacent Properties***

To the south is a secondary school containing a small blueberry farm (see figure 3). To the north, is the Thrangu Monastery/temple which contains a tree fruit orchard on the eastern side of the property (see figure 4) and to the east is a Muslim secondary school (see figure 5).

The properties located to the north, south and east of the property are all zoned Assembly (ASY) (see figure 6).



**Figure 3 Southern Blueberry operation**



**Figure 4 Thrangu Buddhist Monastery/temple Orchard**





**Figure 5 Secondary School to the Southeast**



**Figure 6 Subject Property in Relation to Adjacent Land Use**

### 3.0 Soils

The native soils present on the western half of the subject property are in the Lumbum Triggs (LM – TR) soil complex and the eastern half is in the Richmond series. (see figure 7)

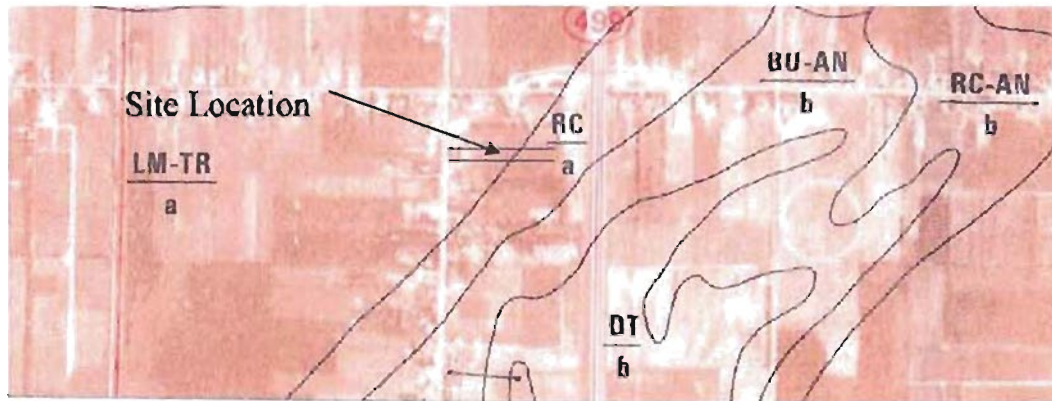


Figure 7 Property Soil Series

#### 3.1 Lumbum Soil Description

Lumbum soils have developed from deep organic materials, mainly remains of moss and shrubs in the upper part and sedges and reeds at depth. The surface horizon is usually undecomposed and is underlain by moderately decomposed horizons to at least four feet. Occasional, thin, well decomposed layers occur. Lumbum soils are poorly drained due to their high organic matter which has high water holding capacity. Both surface and subsoil reaction is extremely acid. At depth, moderate salinity may sometimes be encountered<sup>1</sup>

#### 3.2 Triggs Soil Description

Triggs soils have developed from deep (greater than 2m) undecomposed organic deposits composed mainly of sphagnum and other mosses. Variable amounts of woody debris is commonly present in these soils. These soils are poorly drained, extremely acidic and are not generally suitable for agriculture unless extensive land reclamation takes place.<sup>2</sup>

#### 3.3 Richmond Soil Description

Richmond soils occur mainly near the margins of the organic soil areas. The topography is flat to gently undulating and the elevation ranges from about four to seven feet. These soils are derived from organic deposits which are usually about three feet. In some areas, the organic material was probably several feet thicker but has been removed by mining. Subsurface horizons are well decomposed although the surface is moderately decomposed in most areas. The subsoil mineral soil is usually silty clay loam

<sup>1</sup> Luttmerding, H., & Sprout, P. British Columbia Department of Agriculture, (1969). *Soil survey of delta and Richmond municipalities*. Retrieved from Government of Canada website: [http://sis.agr.gc.ca/cansis/publications/surveys/bc/bc10\\_pre/bc10\\_pre\\_report.pdf](http://sis.agr.gc.ca/cansis/publications/surveys/bc/bc10_pre/bc10_pre_report.pdf)

<sup>2</sup> Luttmerding, H. A. 1981. Soils of the Langley-Vancouver Map Area B.C. Ministry of Environment

or silt loam mixture. Drainage is very poor. Water tables are at or near the surface during the winter and the early part of summer if artificial drainage is not provided.<sup>3</sup>

### **3.4 Anthropogenic disturbances**

A review of historical aerial photos indicate that:

- The site was very disturbed by 2002 with polyhouses, and what seems to be sand or gravel based nursery beds covering the eastern half of the property. (figure 8 and 9)
- Pre load sand from construction of the northern adjacent property deposited on the property. (figure 8)

Site observations confirm the presence of sand ranging from 0-20cm of the soil profile (see figure 11 and 12). Under this sand is a sandy loam mixed with the pre load sand. It is suspected that the sand was leveled over the southern section of the property as the soil pit observations show the greatest amount of sand in this area. As soil pits were dug progressing eastward on the property, the amount of sand present in the soil profile was reduced. The combination of preload sand and soil being deposited on the southern section of the property has created an elevated section of land that runs the length of the eastern portion of the property (see figure 10).

The 2002 City of Richmond maps indicate that the subject property, was a greenhouse nursery operation as seen in figure 9. Based on the mapping, it is suspected that the original organic (peat) soils were excavated and replaced with sand or fill to support better drainage for nursery stock. In addition to the sand present on the subject property, a gravel road can be seen running the length of the property (figure 8 and 10). Given that the western portion of the property is in the Lumbum/Triggs soils complex these soils would have to be removed to allow for the greenhouses and parking that are evident from the City of Richmond mapping site and shown in figure 9.

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<sup>3</sup> Luttmerding IBID



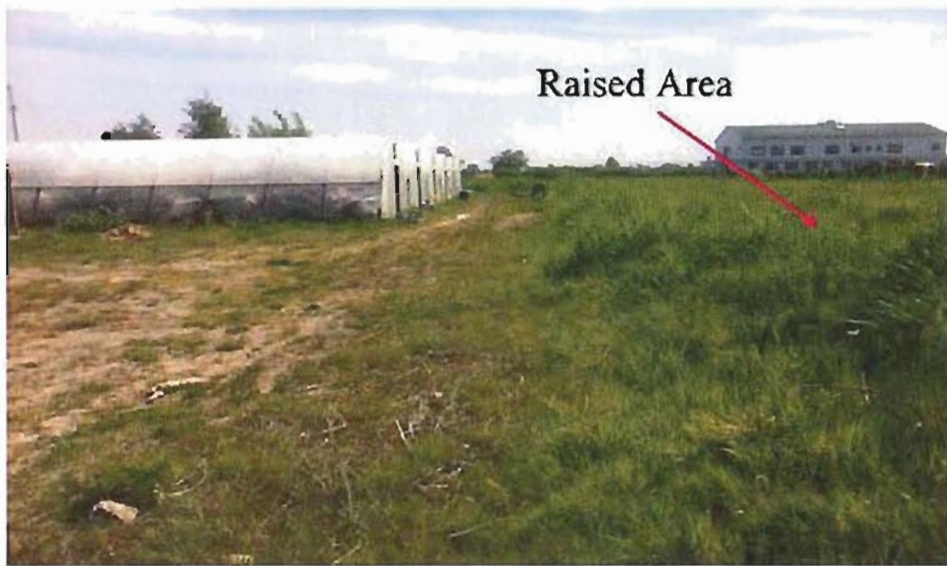
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Figure 8 Stockpiled sand on Subject Property (2009)



Figure 9 Greenhouse/Nursery Operation 2002



**Figure 10 Raised Southern Section of Property**

### **3.5 On Site Soil Observations**

The soil pits installed on the site allowed observations to a depth of four feet and no native soils (Richmond, Lumbum or Triggs) were found to be present on the subject property.

A total of three aggregate soil samples were taken from the disturbed/imported soils found on the subject property. Aggregate samples were taken from the disturbed A and B horizon of the elevated southern section of the property, as well as the kale garden located on the northeast section of the property.



**Figure 11 Sand at Soil Surface**



**Figure 12 Soil Profile Kale Bed Area**



### 3.4.1 Soil Chemistry Raised Area

The sampled A horizon was found to be marginal to deficient in all macro nutrients (N,P,K). The micronutrient analysis shows marginal to deficient levels for all micronutrients excluding Calcium (see figure 13). The pH of the A horizon is slightly alkaline with a pH of 8.0 and has very low organic matter (0.6%). These test results are to be expected due to the high proportion of sand in the subject properties A horizon.

The B horizon results are provided in figure 14. The data shows that the soil contains marginal to deficient amounts of macro nutrients. Soil test results indicate that sulphur is excessive in the subject properties B horizon, however, for practical uses, sulphur toxicity is not an issue. The majority of micronutrients in the subject B horizon are considered optimum with the exception of boron and chlorine which are deficient. The pH of the B horizon soil is slightly acidic with a pH of 5.6, organic matter levels are considered high accounting for 7.8% of the soil sample.

### 3.4.2 Soil Chemistry Kale Garden

Soil test results taken from the Kale garden located on the northwest section of the property are provided in figure 15. These results show deficient amounts of nitrogen and optimum levels of phosphorus, potassium and sulphur. Calcium and magnesium levels are slightly excessive but are in acceptable ranges for agriculture production. Micronutrient levels are all within optimum range with the exception of boron and chlorine. This area is also very high in organic matter (17.4%) which indicates that this soil (though raised in elevations is originally from the subject property and was moved to this area during the historical nursery operation.

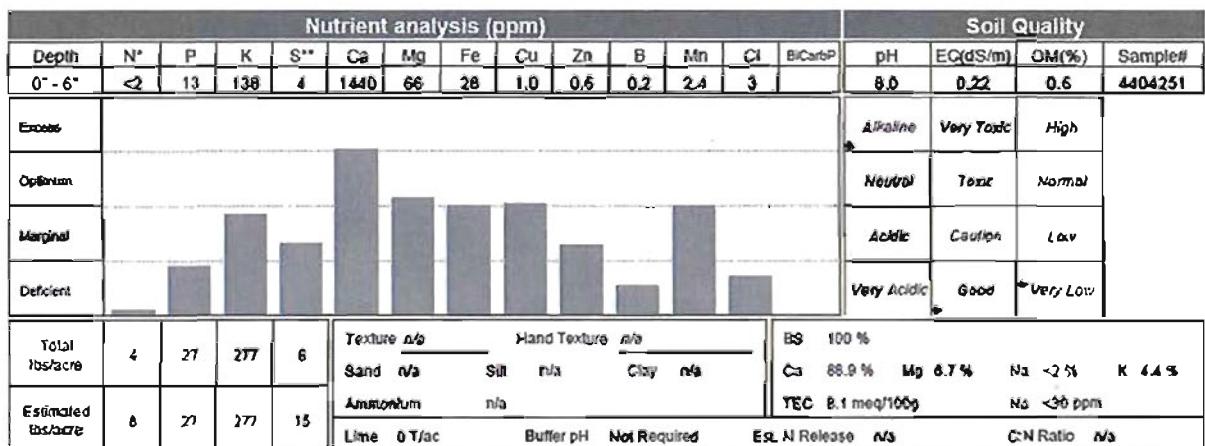


Figure 13 A Horizon Test Results

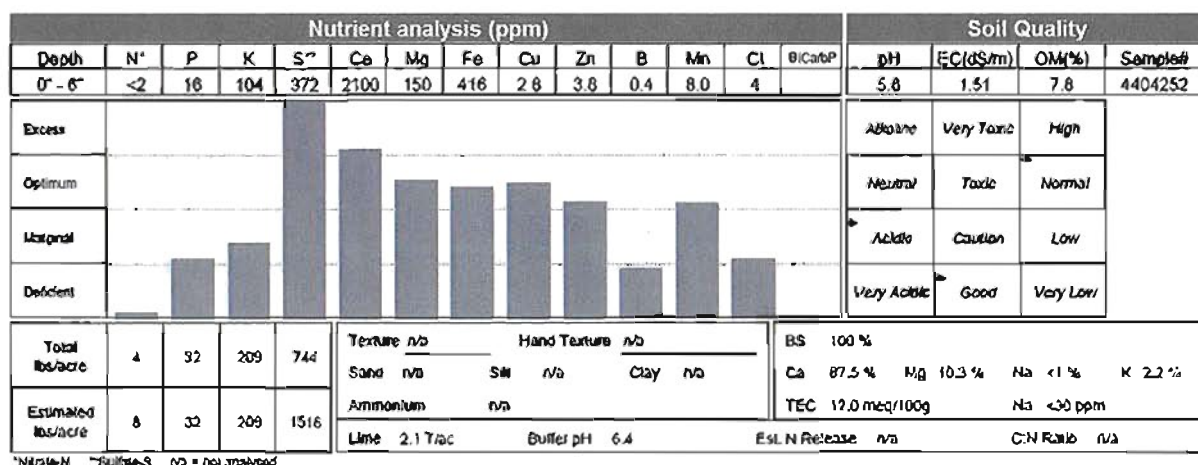


Figure 14 B Horizon Test Results

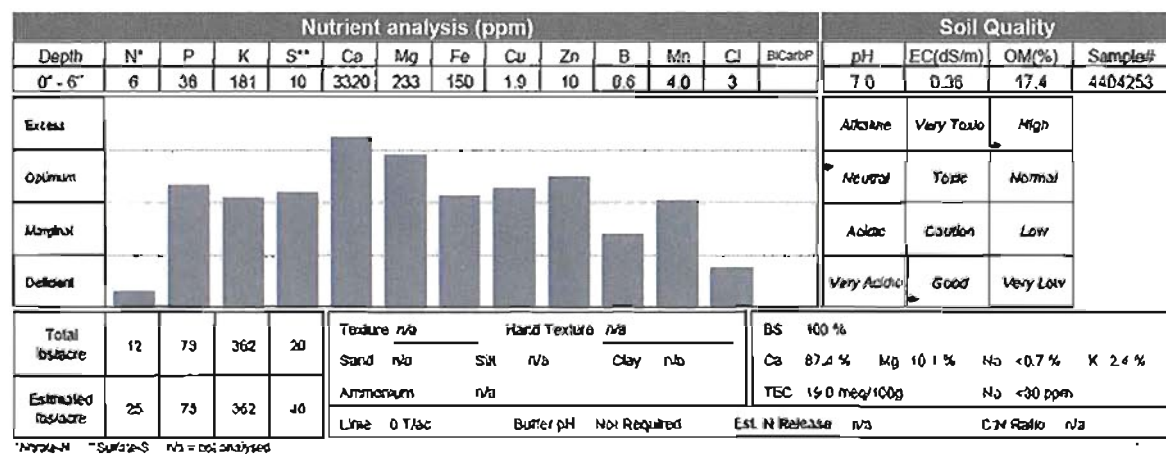


Figure 15 Kale Garden Soil Test Results

## 4.0 On Site Drainage and Topography

The site is relatively flat, however there are two distinct levels to the land base. The area where the polyhouses are located is approximately 0.75m below the rest of the land. As discussed in section 3.0 much of the site has been raised by previous owners operating the nursery greenhouse operation and the present owners moved pre-load sand onto the site.

Since most of the site has been raised the land is well drained. There are ditches south and east that collect water discharged from the site and there are no indication of any negative impacts to surrounding properties. Based on numerous site inspections all portions of the site proposed for agricultural production are well drained. The soil auger sites did not indicate any soil mottling that would be an indication of high water table on the site.



## 5.0 Land Capability for Agriculture

### 5.1 Land Capability based on existing Mapping

The land capability for agriculture base on existing mapping indicates that prior to disturbance the unimproved capability at the west end of the property is 70SWF 204W and on the east end of the property is 04W. The improved capability is 703LW 302W on the west and 03LW on the west end of the property.<sup>4</sup>

Class 2 indicates:

CLASS 2 LAND IN THIS CLASS HAS MINOR LIMITATIONS THAT REQUIRE GOOD ONGOING MANAGEMENT PRACTICES OR SLIGHTLY RESTRICT THE RANGE OF CROPS, OR BOTH.

Land in Class 2 has limitations which constitute a continuous minor management problem or may cause lower crop yields or slightly smaller range of crops compared to Class 1 land but which do not pose a threat of crop loss under good management. The soils are deep, hold moisture well and can be managed and cropped with little difficulty.

Class 3 indicates:

CLASS 3 LAND IN THIS CLASS HAS LIMITATIONS THAT REQUIRE MODERATELY INTENSIVE MANAGEMENT PRACTICES OR MODERATELY RESTRICT THE RANGE OF CROPS, OR BOTH.

The limitations are more severe than for Class 2 land and management practices are more difficult to apply and maintain. The limitations may restrict the choice of suitable crops or affect one or more of the following practices: timing and ease of tillage, planting and harvesting; and methods of soil conservation.

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<sup>4</sup> Henk E., & I Colic. 1983. *Land Capability Classification for Agriculture in British Columbia*. BC Ministry of Environment & Ministry of Agriculture and Food. Kelowna, B.C.

Class 4 indicates:

CLASS 4 LAND IN THIS CLASS HAS LIMITATIONS THAT REQUIRE SPECIAL MANAGEMENT PRACTICES OR SEVERELY RESTRICT THE RANGE OF CROPS, OR BOTH.

Land in Class 4 has limitations which make it suitable for only a few crops, or the yield for a wide range of crops is low, or the risk of crop failure is high, or soil conditions are such that special development and management practices are required. The limitations may seriously affect one or more of the following practices: timing and ease of tillage, planting and harvesting; and methods of soil conservation. Note that in areas which are climatically suitable for growing tree fruits and grapes the limitations of stoniness and/or topography on some Class 4 lands are not significant limitations to these crops. (Refer to Chapter 10).

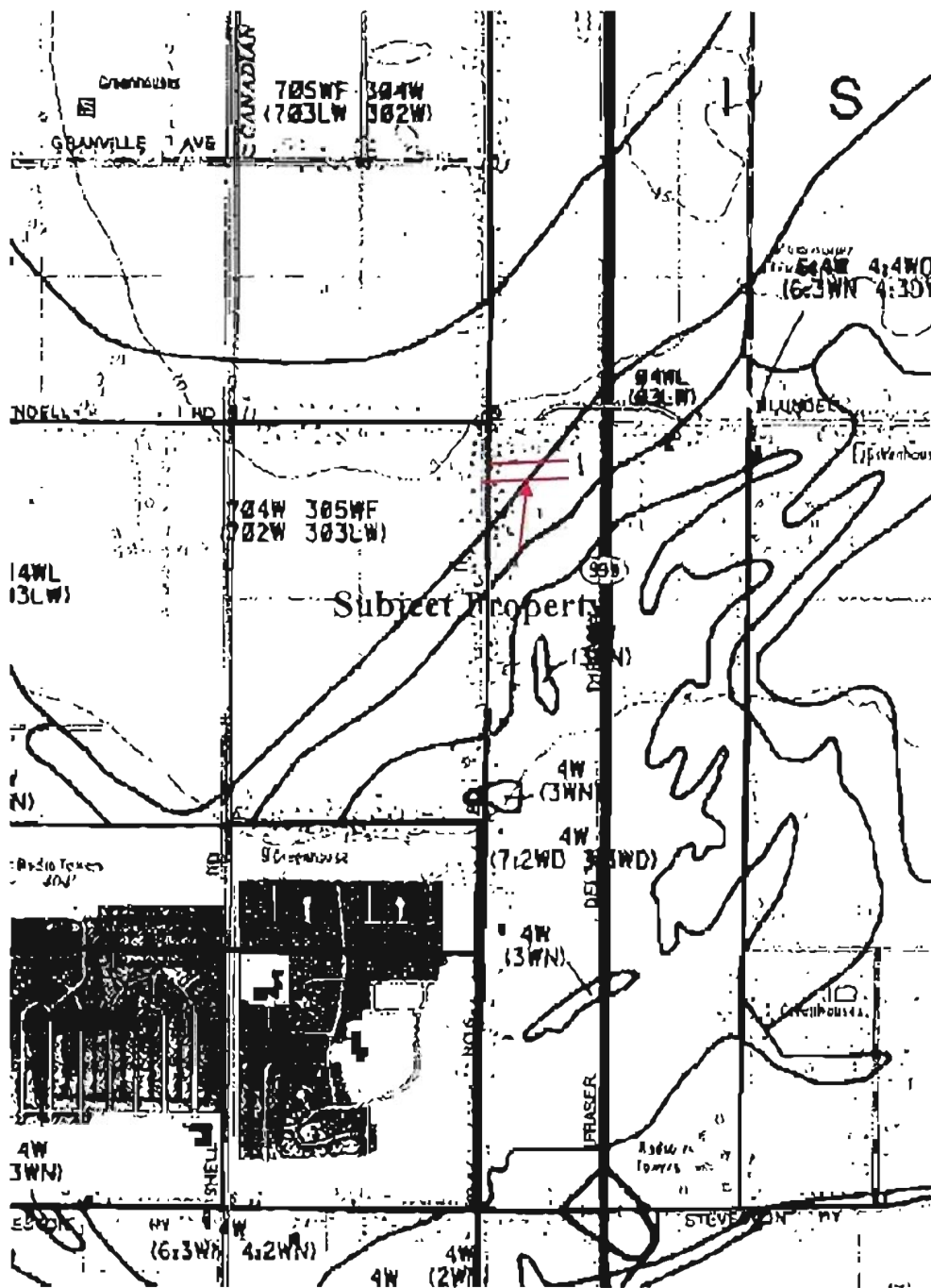
Class 5 indicates:

CLASS 5 LAND IN THIS CLASS HAS LIMITATIONS THAT RESTRICT ITS CAPABILITY TO PRODUCING PERENNIAL FORAGE CROPS OR OTHER SPECIALLY ADAPTED CROPS.

Land in Class 5 is generally limited to the production of perennial forage crops and specially adapted crops (crops such as cranberries suited to unique soil conditions not amenable to a wide range of common crops). Productivity of these suited crops may be high. Class 5 lands can be cultivated and some can be used for cultivated field crops provided unusually intensive management is employed and/or the crop is particularly adapted to the conditions peculiar to these lands. Cultivated field crops may be grown on some Class 5 land where adverse climate is the main limitation, but crop failure can be expected under average conditions. Note that in areas which are climatically suitable for growing tree fruits and grapes the limitations of stoniness and/or topography on some Class 5 lands are not significant limitations to these crops. (Refer to Chapter 10).

Restrictions indicated by the subject properties subclass are summarized below. A detailed description can be found in Appendix III

L- Degree of decomposition  
W- Wetness  
F- Fertility



## **5.2 Assessment of Land Capability based on Site Investigation**

The site has been heavily disturbed as discussed earlier in this report so the existing mapping bears little resemblance to the actual soils and agriculture capability of the site. The following factors have influenced the capability:

- Elevation increase over natural grade.
- Importation of sand and off site soil.
- Historical relocation and mixing of on-site soil.
- Improved drainage due to elevation increase.

The southern portion of the subject property has been raised by the preload sand that was moved from the Thrangu Monastery (north of the subject property) as shown in figure 17. This sand has no chemical or physical restrictions to crop growth, especially if it is handled as described in section 6.1.

The eastern section of the site is also raised above the original ground level but this increase in elevation seems to be with on-site A horizon soil. It is suspected that the original nursery operation may have moved the soil from the polyhouses area and deposited it in this location and mixed it with off-site soil.

The elevation increases on the site have mitigated some of the unimproved wetness capability classification. Based on the site observations the classification of these areas would be Class 2 (after tillage). The L and F sub-classifications will no longer apply as there is no longer a humic, fibric, or muck limitation nor will there be an extreme acidic soil reaction. The W classification will most likely not apply as the elevation increase should ensure that wetness is not a limiting factor and most of the soils are no longer in the organic classification (other than the Kale bed area) so the O classification is removed. Appendix III provides details on sub-classifications.

## **6.0 Improvement of Site for Agriculture**

The following management inputs are recommended to improve the site for agricultural production.

### **6.1 Tillage**

The raised area has a sandy A horizon over a B horizon containing high organic matter and a higher amount of micronutrients relative to the overlaying sandy A horizon. It is recommended that the site be tilled on the southern section that was raised by sand (see figure 17); this will provide the following benefits:

- An increase in organic matter in the upper soil profile allowing for the mobilization of soil nutrients closer to the root zone

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- Incorporating the organically enriched B horizon into the upper soil profile will increase the water holding capacity in the upper soil profile which will decrease the need for irrigation as well as decrease water deficit issues.
- Currently, the upper profile is slightly alkaline. By incorporating the B horizon in the upper profile, the soils pH will be stabilized by the slightly acidic B horizon
- Sandy soils have a low cation exchange capacity, by incorporating the organically enriched B horizon in the upper soil profile, the cation exchange capacity in the upper soil profile will be increased allowing for enhanced nutrient holding capabilities.

The area where tillage is recommended is shown in figure 17.



Figure 17 Raised Southern and Eastern Section

## 6.2 Nutrient Management

The owners of the property plan to run their agriculture operation organically. Although not seeking to be organically certified, the agriculture activities will be carried out in an organic manner. Based on the desire to grow organically, nutrient and pest management will have to be carried out without the use of chemical fertilizer/chemical pesticide. Taking into account the current nutrient availability of the soil present on the property, the author recommends the following organic soil amendments:

- Chicken manure to increase the currently low phosphorus and nitrogen.
- Compost to maintain adequate organic matter as well as provide macro/micro nutrients.
- Lime application. The use of lime should be considered after the recommendations in section 5.0 are put in place. Soil pH should be tested after tillage and lime used accordingly if soil pH is still acidic.

### **6.3 Pest Management**

In addition to growing edible agriculture crops, the property owners have indicated that they would like to incorporate plant species to attract beneficial insects. The purpose of incorporating these plant species is for both pest management without the use of chemical applications, as well as for educational purposes. A list of recommended plants is included in appendix II.

## **7.0 Crop Recommendations and Site Layout**

The subject property has very little restrictions with respect to the range of climatically suited crops that could be grown under irrigation and only moderate restrictions if not irrigated.

Suitable crops for the subject property include but are not limited to:

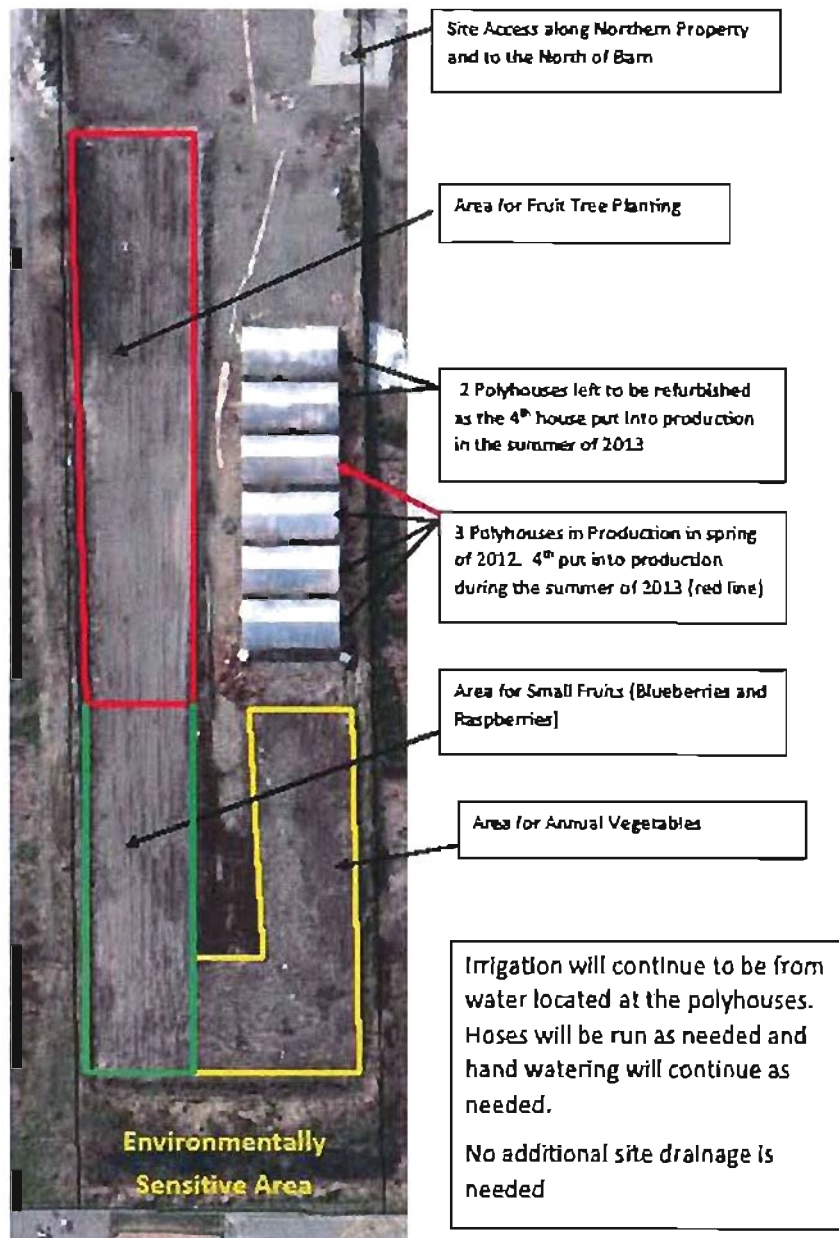
- Annual legumes
- Annual vegetables
- Cole crops
- Raspberries
- Strawberries
- Blueberries
- Grapes
- Tree Fruits

The protected growing structures (poly houses) can support a wide variety of crops and be used for early season vegetable production. Suitable crops in the poly houses include but are not limited to:

- Herbs
- Micro greens
- Annual vegetables including but not limited to;
  - Tomatoes
  - Cucumbers
  - Chili peppers
  - Egg plants
  - Lettuce

### **7.1 Proposed Farm Layout**

The proposed farm layout takes into consideration the existing polyhouses and the expansion of farming to include an area of fruit trees and a separate area of small fruits and annual vegetables. Figure 18 shows the approximate layout of the farm.



**Figure 18 Proposed Farm Layout**

## 8.0 References

Birdsall, F., & Wilson, C. (2010). *Pest control: Growing plants to attract beneficial insects*. Informally published manuscript, Colorado State University, Retrieved from <http://www.colostate.edu/Depts/CoopEx/4DMG/PHC/benefici.htm>

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Revision December 2, 2013.

## **Appendix I    Soil Chemical Analysis**

**PLN - 63**

McTavish Resource & Management Consultants Ltd.

20

## Farm Soil Analysis

EIA For: Report To:	McTavish Resource & Management Consultants McTavish Resource & Management Consultants	Grower Name: Client's Sample ID: Field ID:	No. 5 Budget A Herbicide	Lot Number: Report Number: Date Received: Disposal Date: Report Date: Arrival Condition:	933463 1823432 May 03, 2013 Jun 02, 2013 May 07, 2013 Crop not provided
Address: Legal Location: Last Crop:	2656 Bayview Street Surrey, BC, Canada V4A 2Z4				
Agreement:	10/2024				

Nutrient analysis (ppm)														Soil Quality		
Depth	N	P	K	S <sup>2-</sup>	Ca	Mg	Fe	Cu	Zn	B	Mn	Cl	EC(μsm)	pH	OM(%)	Sampler
0" - 6"	2	13	138	4	1440	68	28	1.0	0.8	0.2	2.6	3		8.0	0.22	440451
Events														Abusive	Very Toxic	High
Optimum														Neutral	Toxic	Normal
Maximal														Acidic	Cautious	Low
Deficient														Very Alkalic	Good	Very Low
Total Isoborne	4	27	277	8	Testure 60p	Hard Texture 90p							BS 100 %			
Estimated Isoborne	5	27	277	15	Swag 60p	Sh 90	Cray 90						Ch 90.3 %	Mo 2.7 %	Mo 2.7 %	K 4.4 %
					Ammonium 60p								TEC 8.1 near 100p			Mo 200 ppm
					Lure 0 70p	Butter pH	Nat Resource						Est. H Release 90p			C:N Ratio 7.2

		Yield	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	S
Macro-nutrients						
Growing Condition					To be added (nutrients)	
Excellent						
Average						
Your Goal						
Removal Rate (Seed/Total)						
Micro-nutrients						
(To be added [balac])						
		Iron	Copper	Zinc	Boron	Manganese

The crop is not provided.  
Can to request a crop-specific recommendation

**Comments:**

Revision December 2, 2013.

**Expos**  
104, 1877-85 A Ave.  
Gurney, British Columbia  
V2S 1S6, Can.303

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## Farm Soil Analysis

<b>Bill To:</b>	McTavish Resources & Management Consultants	<b>Grower Name:</b>	No. 6 Buchanist	<b>Lot Number:</b>	913453
<b>Report To:</b>	McTavish Resource & Management Consultants	<b>Client's Sample Id:</b>	B Horizon	<b>Report Number:</b>	1923433
	2656 Bayview Street	<b>Field Id:</b>		<b>Date Received:</b>	May 09, 2013
	Surrey, B.C., Canada	<b>Acre:</b>		<b>Disposal Date:</b>	Jun 02, 2013
	VIA 224	<b>Legal Location:</b>		<b>Report Date:</b>	May 07, 2013
<b>Agreement:</b>	100024	<b>Last Crop:</b>	Crop not specified	<b>Amplification:</b>	

Nutrient analysis (ppm)														Soil Quality							
Depth	N*	P	K	S**	Ca	Mg	Fe	Cu	Zn	B	Mn	Cl	B/CaP	pH	EC(dS/m)	OM(%)	Sample#				
0' - 6"	~2	16	104	372	2100	150	410	2.8	3.8	0.4	8.0	4		5.6	1.51	7.8	44Q252				
Excess														Alkaline	Very Toxic	High					
Optimum														Neutral	Toxic	Normal					
Marginal														Acidic	Cautious	Low					
Deficient														Very Acidic	Good	Very Low					
Total Percent Estimated Balance	4	32	20%	744	Texture (g)			Hard Texture			BS 100 %										
					Sand	NA	EST	NA	Clay	NA											
					Ammonium	NA								Ca	87.5 %	Mg	10.3 %	N	<1 %	K	2.5 %
	8	32	20%	1516	Lime	2.1 Tacs	Buffer pH			6.4	EC			12.0 meq/100g	NA	<0.0 ppm	C:N Ratio	N/A			
											Est. N Release			NA							

## RECOMMENDATIONS FOR BALANCED CROP NUTRITION

Macro-nutrients	Crop not provided			
	Yield	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
Growing Condition				
Excellent				To be added (100/30/30)
Average				
Your Soil				
Removal Rate (Seed Treat)				
Micro-nutrients				
Iron				
Copper				
Zinc				
Baron				
Magnesium				

The crop is not provided.  
Call to (800) 551-0000 for more information.

**Comments:**

Revision December 2, 2013.

**Shaw.**  
1104, 507-6782 Ave.  
Surrey, British Columbia  
V4A 4C6, Canada  
T: +1(604) 514-3321  
F: +1(604) 514-3321  
E: [Shaw@shaw.com](mailto:Shaw@shaw.com)  
W: [www.shaw.com](http://www.shaw.com)

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### Farm Soil Analysis

Bill To:	McTavish Resource & Management Consultants	Grower Name:	No. 5 Buddinst	Lot Number:	903453
Recpt To:	McTavish Resource & Management Consultants	Client's Sample Id:		Report Number:	1823434
	2658 Bayview Street	Field Id:	Kyle Garden	Date Received:	May 03, 2013
	Etterbury, BC, Canada		A2002	Disposal Date:	Jun 02, 2013
	V1A 2Z4		Legals LocalBart	Report Date:	May 07, 2013
Agreement:	1030224		Last Crop:	Arrival Condition:	

Nutrient analysis (ppm)													Soil Quality				
Depth	N"	P	K	S"	Ca	Mg	Fa	Cl	Zn	B	Xm	Cl	B.CaP	pH	EC(σsm)	OM(%)	Sample#
2" - 6"	6	56	1611	40	3320	223	150	1.9	10	0.6	4.0	3		7.0	0.36	17.4	4404293
Leaves														Alkaline	Very Toxic	High	
Optimum														Neutral	Toxic	Normal	
Marginal														Acidic	Cautious	Low	
Deficient														Very-Acidic	Good	Very Low	
Total Barely	62	73	302	20	Texture: c/s				Sand Texture: n/s				65	100 %			
					Sand: n/s	Silt: n/s	Clay: n/s							Ca: 37.4 %	Mg: 10.1 %	16 - 0.7 %	K: 2.4 %
Estimated Barely	25	73	560	40	Ammonium: n/s				TEC: 89.3 mg/1000				153	0.00 gm			
					Lime: 0 Tons				Balls: 0 Tons				Not Required				
									Est. H Ratio: n/s				C:N Ratio	15			

## RECOMMENDATIONS FOR BALANCED CROP NUTRITION

	Group not provided					
	Yield	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	S	
Macro-nutrients						
Growing Condition			To be added (See notes)			
Excellent						
Average						
Your Goal						
Removal Rate (See Notes)						
Micro-nutrients						
	Iron	Copper	Zinc	Boron	Manganese	

The crop is not provided.  
Call to request a case-specific recommendation.

### CONCLUSIONS:

## Appendix II Plants selection for beneficial insects

### Early blooming

Basket of Gold *Aurinia saxatilis*

Rocky Mountain penstemon *Penstemon strictus*

Native potentilla *Potentilla verna*

Creeping thyme *Thymus serpyllum*

Sweet alyssum *Lobularia maritima*

Columbine *Aquilegia x hybrida*

Carpet bugleweed *Ajuga reptans*

### Midseason blooming

Common yarrow *Achillea filipendulina* 'Coronation Gold'

Dwarf alpine aster *Aster alpinus*

Spike speedwell *Veronica spicata*

Wine cups (Poppy mallow) *Callirhoe involucrata*

Cilantro (Coriander) *Coriandrum sativum*

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English lavender *Lavandula angustifolia*

Sulfur cinquefoil *Potentilla recta* 'Warrenii'

Edging Lobelia *Lobelia erinus*

Mint *Mentha* sp.

Stonecrop (various) *Sedum* sp.

#### **Late blooming**

Fernleaf yarrow *Achillea millefolium*

Lavender globe lily *Allium tanguticum*

Dill *Anethum graveolens*

Dyer's camomille *Anthemis tinctoria*

Fennel *Foeniculum vulgare*

Sea lavender *Limonium latifolium*<sup>5</sup>

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<sup>5</sup> Birdsall, J., & Wilson, C. (2010). *Pest control: Growing plants to attract beneficial insects*. Informally published manuscript, Colorado State University, Retrieved from <http://www.colostate.edu/Depts/CoopEx4DMG/PHC/benefici.htm>

### **Appendix III Agriculture Capability Subclass Descriptions**

CLASS 5W: Frequent or continuous occurrence of excess water during the growing period making the land suitable for only perennial forage crops, and/or improved pasture. Water level is near the soil surface until early summer, or the maximum period the water level is less than 20 cm below the soil surface is 6 weeks during the growing period, or the soil is very poorly drained, commonly with shallow organic surface layers. Effective grazing period is longer than 10 weeks.

CLASS 5F: Includes soils with very severe nutrient imbalances, extreme acidity or alkalinity and/or extremely high levels of carbonates. Fertility status restricts the range of crops to perennial forages or other specially adapted crops such as cranberries. With very intensive, closely controlled and carefully monitored applications of fertilizers and/or other soil amendments, these soils are improvable in crop range, climate permitting. If expected crop range upon improvement is wide the Improved Rating is 2F, otherwise 3F.



CLASS 4W: Frequent or continuous occurrence of excess water during the growing period causing moderate crop damage and occasional crop loss. Water level is near the soil surface during most of the winter and/or until late spring preventing seeding in some years, or the soil is very poorly drained.

CLASS 3W: Occasional occurrence of excess water during the growing period causing minor crop damage, but no crop loss, or the occurrence of excess water during the winter months adversely affecting perennial crops. Water level is near the soil surface until mid-spring forcing late seeding, or the soil is poorly and in some cases imperfectly drained, or the water level is less than 20 cm below the soil surface for a continuous maximum period of 7 days during the growing period.

CLASS 2M: Occasional occurrence of excess water during the growing period causing slight crop damage, or the occurrence of excess water during

the winter months adversely affecting deep rooted perennial crops. Water level is rarely, if ever, at the surface and excess water is within the upper 50 cm for only short periods (less than 2 weeks) during the year.

CLASS 03L: Dominantly humic or fibric soil in the 30 to 150 cm depth and/or aquatic muck greater than 5 cm thick in the 100 to 150 cm depth of the profile and/or a cumulo or continuous layer of loamy soil greater than 5 cm thick occurring in the upper 150 cm.