

**Ontario Municipal Board**  
**Commission des affaires municipales de l'Ontario**

**PROCEEDING COMMENCED UNDER** subsection 34(11) of the Planning Act, R.S.O. 1990, c. P. 13, as amended

Applicant and Appellant: Eden Oak (Creditview Heights) Inc.  
Subject: Application to amend Zoning By-law 74-51 –  
Refusal or neglect of the Town of Halton Hills to  
make a decision

Existing Zoning: RU  
Proposed Zoning: RE  
Purpose: To permit a development consisting of 31 single  
detached lots

Property Address/Description: Part Lot 20, Concession 9  
Municipality: Town of Halton Hills  
Municipality File No.: D14ZBA08.004  
OMB Case No.: PL150128  
OMB File No.: PL150128  
OMB Case Name: Eden Oak (Creditview Heights) Inc. v. Halton Hills (Town)

**PROCEEDING COMMENCED UNDER** subsection 51(34) of the Planning Act, R.S.O. 1990, c. P. 13, as amended

Applicant and Appellant: Eden Oak (Creditview Heights) Inc.  
Subject: Proposed Plan of Subdivision – Failure of the  
Town of Halton Hills to make a decision

Purpose: To permit a development consisting of 31 single  
detached lots

Property Address/Description: Part Lot 20, Concession 9  
Municipality: Town of Halton Hills  
Municipality File No: D12SUB08.001  
OMB Case No.: PL150128  
OMB File No.: PL150129

Hearing Date: Monday, February 27, 2017 – Town of Halton Hills  
10 days

WITNESS STATEMENT  
OF  
**RENATO QUIAMBAO, P.Eng**  
(February 3, 2017)



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## WITNESS STATEMENT OF

**RENATO QUIAMBAO, P.Eng**

Position: Senior Engineer  
V A Wood Associates Limited  
1080 Tapscott Road, Unit 24  
Scarborough, Ontario M1X 1E7

Qualifications: B. Sc., Geology  
Licensed Professional Engineer in the Province of Ontario

Issues Addressed: Slope Stability Analysis and Geotechnical Engineering comments

### 1. INTRODUCTION

- 1.1 I, Renato Quiambao, prepared this Witness Statement in respect of appeals to the Ontario Municipal Board (OMB) regarding a proposed Amendment to the Official Plan, Amendment to the Zoning By-law, and draft plan approval application for the lands municipally known as Part of Lot 20, Concession 9 in the Town of Halton Hills.
- 1.2 This Witness Statement outlines my qualifications, the issues and matters I will cover in evidence before the OMB, and summarizes my opinions and conclusions as they relate to the appeals.

### 2. QUALIFICATIONS

- 2.1 I am a Professional Engineer licensed to practice in Ontario, with over twenty years of experience in geological, geoseismic and geotechnical engineering. I am a Senior Engineer at V A Wood Associates Limited, a consulting geotechnical engineering practice with expertise in infrastructure, buildings and land development. My work with the firm includes the preparation of geotechnical engineering reports and geotechnical site inspections. My projects have included a broad range of developments, from infrastructure projects to individual house developments.

- 2.2 My work and expertise involves both private land development infrastructure, as well as municipal capital infrastructure projects.
- 2.3 I have provided professional engineering evidence before the Ontario Municipal Board as an expert witness on previous occasions. Attached as Appendix A to this Witness Statement is a copy of my Curriculum Vitae as well as a signed Acknowledgment of Experts' Duty.

### **3. RETAINER**

- 3.1 Our firm was retained by Edenoak (Creditview Heights) Inc. to carry out the geotechnical investigation and slope stability assessment with respect to a residential development proposal for the lands described as Part of Lot 20, Concession 9 (the "Site") in the Town of Halton Hills (the "Town").
- 3.2 The purpose of our investigation was to reveal the subsurface conditions, provide geotechnical recommendations for the design and construction of the foundation of the site services and houses and carry out the stability assessment of the slopes within the Site.
- 3.3 I am providing an independent opinion to the Board by maintaining professional objectivity and providing impartial evidence on matters that are within my area of expertise. Attached to this witness statement is my signed 'Acknowledgment of Expert's Duty' statement.

### **4. DOCUMENTS TO BE RELIED UPON**

- 4.1 As part of my review and opinion, I will rely on the following documents:
- (a) *Geotechnical Investigation and Slope Stability Assessment, Proposed Subdivision, Part of Lot 20, Concession 9, Town of Halton Hills, Ontario*, Revised June 2016, V A Wood Associates Limited
- (b) *Slope Stability Assessment, Revised SWM Pond, Glen Williams Subdivision, Halton Hills, Ontario*, January 23, 2017, V A Wood Associates Limited

## 5. SITE CONTEXT

- 5.1 The Site is an irregularly shaped property in the southerly portion of the hamlet abutting the Georgetown urban area. The area proposed for development encompasses an area of 8.073 hectares, and is currently vacant.
- 5.2 The Site topography is diverse and complex. Significant slopes exist along the northerly and northeasterly portions of the property.
- 5.3 There is a low-lying area in the middle northern part of the Site where the Storm Water Management (SWM) pond is proposed.

## 6. ISSUES TO BE ADDRESSED

- 6.1 Comments relating to geotechnical and slope stability issues on the site plan application were received from the Town, Halton Region and Credit Valley Conservation on various dates between 2006 and 2017. A resubmission of technical materials was provided and the reply to the comments were incorporated in the revised June 2016 Geotechnical Report.
- 6.2 The SWM pond was recently re-designed to include a two-tier pond, each with a berm and a retaining wall. The global stability of the new berms and retaining walls was assessed and the findings were presented in the letter dated January 23, 2017.
- 6.3 My evidence will address the geotechnical matters on the following Issues list:

### Town and Region Issues

- 12) *Is the stormwater management system appropriate addressing issues of function, maintenance, flooding potential design, downgradient and offsite impacts and property rights, so that it may be supported, and if so, what stormwater conditions are necessary?*

### The Hamlet of Glen Williams Residents Association Issues

- 8) *Is all proposed development adequately set back from all slopes? Has proper slope stability been achieved and all geotechnical issues resolved?*

### Issues for Robert and Donna Irvine, and Joan Griffin

9) *Has acceptable slope stability been demonstrated and have all geotechnical issues been properly addressed?*

## 7. OPINION

**ISSUE** *Town and Region Issue 12) Is the stormwater management system appropriate addressing issues of function, maintenance, flooding potential design, downgradient and offsite impacts and property rights, so that it may be supported, and if so, what stormwater conditions are necessary?*

- 7.1 The results of the slope stability calculations were presented in the letter dated January 23, 2017. The findings showed that the retaining walls have to be sufficiently embedded to attain the required global stability factor of safety. The required factor of safety could also be attained by locating the wall further into the slope or if a shallower slope angle is used at the top of berm.

The calculations were carried out for both static and seismic conditions, and for the regional flood condition. The seismic condition was based on the peak ground acceleration obtained from the Canada Geological Survey study, which was based on a return period of 2,500 years. The SWM facility has a design life of 100 years.

- 7.2 Therefore, I am of the opinion that, based on the analyses and subject to sufficient embedment of the retaining wall or a revised wall location or slope angle, the proposed two tier berm design is geotechnically stable for the design life of the SWM pond.

**ISSUE:** *The Hamlet of Glen Williams Residents Association Issue 8) Is all proposed development adequately set back from all slopes? Has proper slope stability been achieved and all geotechnical issues resolved? and Issues for Robert and Donna Irvine, and Joan Griffin 9) Has acceptable slope stability been demonstrated and have all geotechnical issues been properly addressed?*



- 7.3 A slope stability assessment was carried out for the slopes along the northern and northeastern perimeter of the Site to determine the location of the Long Term Stable Top of Slope (LTSTOS). The assessment was based on the requirements defined on the Ontario Ministry of Natural Resources 'Natural Hazards Training Manual', which form the basis of the requirements of the Conservation Authorities. From the results of the assessment the location of the LTSTOS Line was determined and this was shown on the Site plan in the Geotechnical Report. The LTSTOS Line (plus the required buffer) was used as the basis for determining the lot lines.


The findings of the geotechnical investigation were presented in the Geotechnical Report. The recommendations for the design and construction of the services, pavements and foundations were provided.

#### Conclusion

- 7.4 Based on the work and assessment which I have undertaken I am of the opinion that all geotechnical issues related to slope stability and setback from stable top of slope have been addressed in the proposed design of the subdivision and that the Town's proposed conditions of draft approval ensure that these matters will be adequately addressed and proper design will be implemented.
- 7.5 I am prepared to elaborate on the topics set out in this witness statement when I testify and to be cross-examined.

Respectfully submitted,

**V A WOOD ASSOCIATES LIMITED**

  
Renato Quiambao, P.Eng  
Senior Engineer





**RENATO T. QUIAMBAO**

56 Coleridge Drive, Newmarket, Ontario L3X 2T6, Canada  
 renequiambao04@yahoo.com

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**SUMMARY OF QUALIFICATIONS**

**Geological/Geotechnical Engineer** with over 20 years of extensive experience (12 years in Canada) in site appraisal and investigations, seismic geo-hazard assessment (liquefaction, ground shaking and site effects, slope stability, fault rupture, tsunamis, and earthquake-induced flooding), retaining wall and slope stability analysis, geological and hydrogeological studies, shallow and deep foundation analysis and design, aerial photograph interpretation and remote sensing for geological applications, geotechnical report writing, and construction supervision of various infrastructure projects.

**TECHNICAL SKILLS**

**Software Applications:** MS Word, WordPerfect, Excel, Quattropro, Powerpoint

**Geotechnical Analysis Programs :** SLOPE/ G-Slope-slope stability analysis, FREW-flexible retaining wall analysis, PILE-pile analysis, PILSET-pile lateral load analysis, VDISP-vertical displacement/settlement analysis, ALP-pile lateral load analysis, SAFE-finite element analysis, SIREN-site response analysis, SISMIC-probabilistic seismic hazard assessment, LIQEFY-liquefaction analysis, Win-Log geotechnical log presentation

**CERTIFICATIONS**

Registered Professional Engineer, Province of Ontario  
 Registered Professional Geologist, Philippines

**PROFESSIONAL EXPERIENCE**

6/04 – Present

**Senior Engineer /Project Manager**

**VA Wood Associates Ltd., Scarborough, Ontario, Canada**

- Performs geotechnical investigation assessment of sites for subdivisions, schools, buildings, bridges and other civil engineering structures.
- Carries out geotechnical inspection of construction sites.
- Carries out slope stability assessment of various sites.
- Writes geotechnical, foundation, site appraisal, slope assessment and environmental assessment reports.
- Manages geotechnical projects.
- Coordinates geotechnical work and provides geotechnical advice to Clients (Engineers, Architects, Contractors, Builders, Government Agencies, Owners).

4/03-2/04

**Senior Geotechnical Engineer**

**Dragages et Travaux Publics HK Ltd., Hong Kong.**

- Senior Engineer for the Kowloon Canton Railway Corporation (KCRC) East Rail Extensions Contract LDB201-Sheung Shui to Chau Tau Tunnels.
- Programmed and monitored site investigations and seismic reflection surveys.
- Prepared geological drawings for a tunnel boring machine (TBM) and monitored geotechnical aspects of construction works for shafts, cross passages and pile foundations.

1/97-3/03

**Senior Engineering Geologist****Ove Arup & Partners HK Ltd., Manila, Philippines**

- Headed geotechnical group and was responsible for all engineering geological and geotechnical requirements of the Manila office including geotechnical design and seismic geo-hazard assessment of projects.
- Provided input and advise to the structural design group and external clients on foundation, stability of slopes and retaining walls, seismic geo-hazards, ground investigation and project construction.
- (2002-2003) *The Shang Grand Tower*, Makati, Philippines - Lead Geotechnical Engineer of a 42-story office condominium with 4-level basement. Responsible for design of foundation and temporary works for a 24m deep excavation in tuff adjacent and existing building.
- (2002) *Cebu Country and Forest Estates*, Cebu, Philippines - Project Manager for the assessment of geological hazards of a proposed 200 hectare subdivision-farm estates development. Involved assessment of two sites underlain by decomposed mudstones and shale under high piezometric ground water conditions. Work scope included zoning the property into stable, non-development and marginal areas, and delineation of feasible alignment of access roads and areas for house construction.
- (2002) *Mirant Pagbilao Power Station*, Philippines - Lead Geotechnical Engineer for the structural investigation and assessment of an existing Coal Unloading Jetty. Provided underwater inspection, underwater pile coring and testing of concrete cores, and the assessment of jetty pile condition.
- (2002) *Campbell Town TAFE Block J*, Sydney, Australia - Engineering Geologist for the site investigation and structural assessment of the cracking of an existing school building.
- (2002) *Eastern Creek Racetrack Redevelopment*, Sydney, Australia - Engineering Geologist for the contamination desk study of a proposed redevelopment site.
- (2002) *Lufthansa Technik Philippines Aircraft Overhaul Upgrade*, Philippines - Lead Geotechnical Engineer for the detailed design of the upgrade of an existing aircraft maintenance hanger at the Ninoy Aquino International Airport. Conducted specific investigations, geotechnical assessment, and foundation design.
- (2002) *One Legazpi Park*, Makati, Philippines - Geotechnical Engineer for the design review of a 45-story condominium with a 4-level basement.
- (2002) *Ayala Heights*, Cebu, Philippines - Engineering Geologist for the site-wide subdivision and farm estates development. Determined geological hazards and prepared mitigation measures for site development in landslide-prone mudstone and shale.
- (2001) *Procter & Gamble (P&G) Hellas*, Aspropyrgos, Attica, Greece - Geotechnical Engineer for stage 2 seismic assessment of two existing warehouses based on FEMA guidelines. Included assessment of seismic geo-hazards and stability analysis of existing foundation.
- (2001) *Proposed Additional Reclamation for Hardstanding Off RB1077 & Extension*, Hong Kong - Engineering Geologist for the natural terrain hazard assessment of the Middle Island site of the Royal Hong Kong Yacht Club. Involved evaluation of geo-hazards and formulation of mitigation measures.
- (2001) *LDB-201 East Rail Extension*, NT Hong Kong – Geotechnical Engineer for tunnel feasibility study of proposed Lok Ma Chau Spur Line for KCRC.
- (2001) *No. 6C Stubbs Road*, Hong Kong – Evaluated stability of a vertical rock slope in jointed granite adjacent to a nearby parking lot and residential buildings.
- (2001) *Proposed Residential Development at Sai Sha*, NT Hong Kong – Provided geotechnical design of marina quay wall and breakwater.
- (2001) *P&G Gebze*, Sanipak, Turkey – Geotechnical Engineer for stage 2 seismic geo-hazard assessment of the facilities based on FEMA guidelines and evaluation of foundation seismic capacity.
- (2000-2001) *EDSA-Estrella Flyover*, Makati, Philippines - Lead Geotechnical Engineer for the detailed design of a 560m-long elevated road on pile foundation constructed above an operating depressed rail transit line.
- (2000) *Queen Mary Hospital Natural Terrain Hazards Assessment*, Hong Kong – Formulated mitigation measures and evaluated geological hazards from a natural slope above hospital compound.



1/97-3/03 (cont.)

**Senior Engineering Geologist****Ove Arup & Partners HK Ltd., Manila, Philippines**

- (2000) *Proposed Bongkot CSST*, Thailand – Supervised site investigations for the proposed casting basin of a concrete sausage storage terminal in extremely soft clays in Laem Cha Bang.
- (2000) *P&G Takasaki, Stage 3 Seismic Assessment of Building 51*, Takasaki, Japan – Lead Geotechnical Engineer responsible for seismic hazard assessment and foundation analysis for the seismic performance study of a 40 year old factory building based on FEMA guidelines leading to retrofit design. Prepared specifications for down-the hole shear wave velocity testing and supervised site investigations.
- (2000) *P&G Xiqing*, Tianjin, China – Geotechnical Engineer for pile foundation of a proposed GSS Building and New Materials Storage Building.
- (2000) *P&G Thailand Whisper Plant Expansion*, Thailand – Reviewed foundation of the proposed factory building using driven piles in alluvial soils.
- (2000) *P&G Chonan Slope Assessment*, Chonan City, South Korea – Conducted preliminary evaluation of a 30m high rocket cut slope in jointed granite behind the plant facility.
- (2000) *P&G Huang Pu Whisper Plant Expansion*, Guangzhou, China – Geotechnical Engineer for front end engineering design and review of driven pile foundation.
- (1999) *Procter & Gamble Songbe Water Treatment Tank*, Ho Chi Minh City, Vietnam – Evaluated the pile foundation of a water treatment tank.
- (1999) *Rockwell Retail Centre*, Makati, Philippines – Geotechnical Engineer for the detailed design of a large retail complex with 3-level basement in decomposed tuff close to a major river.
- (1999) *KCRC West Rail TDD-500*, NT, Hong Kong – Assisted in the detailed design of the foundation for Tai Wai Depot, including assessment of negative skin friction for foundation piles.

5/95-10/98

**Geotechnical Engineer****Ove Arup & Partners HK Ltd., Hong Kong**

- (1998) *Cityland GT Tower*, Makati, Philippines – Reviewed diaphragm retaining wall design to support Tower during basement excavation.
- (1998) *Cityland Herrera-PBCom Tower*, Makati, Philippines – Reviewed rock anchor design to support building during basement excavation of the adjacent PBCom Tower.
- (1998) *Tabangao-Sta Rita Natural Gas Pipeline* – Prepared specifications for ground investigation and reviewed geotechnical assessment reports for the 8km alignment of gas pipeline (included 2 river crossings, an offshore section, and a section through fishponds and marshy ground).
- (1997-98) *P&G DLP Plant Cabuyao*, Philippines – Lead Geotechnical Engineer responsible for seismic hazard assessment and foundation design of a new detergent factory plant.  
(1998-2002) – Responsible for foundation design of a number of smaller facilities at the same site.
- (1997-98) *Embassy Pointe Tower*, Manila, Philippines – Geotechnical Engineer for the foundation and basement design of a 42 story condominium situated on soft clays and liquefiable sands along Manila Bay reclamation area. Carried out specific site response analysis.
- (1997) *Essensa Condominium*, Makati City, Philippines – Lead Geotechnical Engineer for the scheme and detailed design of a 40 story twin tower in Fort Bonifacio. Reviewed foundation design and provided assessment of a fault exposed during basement excavation.
- (1997) *Ilijan Power Station*, Philippines – Conducted site seismic hazards assessment of the site for Powergen International.
- (1997) *Proposed R5 Elevated Road*, Metro Manila, Philippines – Geotechnical Engineer during the ground investigations for the proposed 8km long elevated Radial Road No. 5 for Arup Jururunding Bhd in behalf of Ireka Construction Bhd of Malaysia.
- (1997) *Phil Am Tower*, Makati, Philippines – Geotechnical Engineer for the design of the 40 story Phil-Am Life Tower with 4 basement levels in decomposed tuff formation.

5/95-10/98 (cont.)

**Geotechnical Engineer****Ove Arup & Partners HK Ltd., Hong Kong**

- (1997) *Mirant Pagbilao Power Station Access Road*, Quezon, Philippines – Supervised site investigations and laboratory testing for the assessment and rehabilitation of the 15km access road and bridge crossing.
- (1997) *Makati Loop*, Makati City, Philippines – Lead Geotechnical Engineer for the detailed design of the retaining wall for the depressed section of the light rail and road tunnel. Provided seismic design review of pile for the elevated road at the EDSA and Ayala Avenue junction.
- (1997) *J & P Coats Manila Bay*, Marikina, Philippines – Resident Engineer for the construction of the pile foundation of a generator and appurtenant facilities in deep soft clay deposits.
- (1997) *South Luzon Tollway Extension*, Philippines – Engineering Geologist involved in the walk-over survey of the proposed 94-km toll way extension.
- (1997) *Cityland Pasong Tamo*, Makati, Philippines – Geotechnical Engineer for the design review of a 32-story condominium. Assessed slope stabilization of the basement excavation slope failure.
- (1997) *Belle Bay City*, Manila Bay Reclamation, Philippines – Assisted Checking Engineer during the construction of a deep diaphragm wall for a large basement excavation in a reclamation site with soft clay and liquefiable sands.
- (1997) *First Gas LNG Terminal*, Batangas, Philippines – Led seismic geo-hazard assessment for the proposed sites of the Sta. Rita Power Station and LNG Terminals. Evaluated geo-seismic and volcanic hazards.
- (1996) *Kerry Cargo Centre*, Hong Kong – Resident Engineer of piling works for the Kerry Cargo Centre at Kwai Chung, New Territories. Supervised site investigations and construction of large diameter belled bored piles through fill and decomposed rock into granite bedrock.
- (1996) *Cheung Kong (Hilton Hotel) Redevelopment*, Hong Kong – Carried out finite element analysis of retaining wall and foundation.
- (1996) *Daewoo Electronics HQ*, Seoul, South Korea – Conducted flexible retaining wall analysis for the basement and foundation of the proposed Headquarters.
- (1995-96) *Landslip Preventive Measures*, Hong Kong – Geotechnical Engineer responsible for several Landslip Preventive Measure (LPM) sites involving Stage 1 studies on the stability of slopes and retaining walls for the Hong Kong Geotechnical Engineering Office. Carried out aerial photograph interpretation of a number of LPM sites.

6/94-03/95

**Geologist****Certeza Surveying and Aerophotosystems, Manila, Philippines**

- Key participant in the seismic zonation of West-central Luzon and selected urban areas for DPWH. Prepared urban seismic zonation maps for ground shaking, liquefaction, landslides and fault surface rupture. In addition, prepared regional geo-hazards map for west-central Luzon.

1/88-05/94

**Geologist & Staff Assistant****Nin Bay Mining Company-San Miguel Packaging Products Corporation, Manila, Philippines**

- Responsible for sourcing silica, limestone and feldspar sand requirements of the San Miguel Corporation Glass Plants. Responsible for grade control and maintenance of mining claims of the company's four operating mines, in Palawan, Pampanga, and Rizal. Conducted the exploration of ore deposits for the industrial mineral and silica deposits in Can Rahn Bay, Vietnam, and Kuala Penyu Sabah, Malaysia.

**EDUCATION**

- **Bachelor of Science in Geology, University of the Philippines**



## Ontario Municipal Board

## ACKNOWLEDGMENT OF EXPERT'S DUTY

Case Number	Municipality
PL150128	Town of Halton Hills

1. My name is Renato Quiambao  
I live at the Town of Newmarket  
in the Region of York  
in the Province of Ontario
2. I have been engaged by or on behalf of Edenoak (Creditview Heights) Inc.  
to provide evidence in relation to the above-noted Board proceeding.
3. I acknowledge that it is my duty to provide evidence in relation to this proceeding  
as follows:
  - a. to provide opinion evidence that is fair, objective and non-partisan;
  - b. to provide opinion evidence that is related only to matters that are within my  
area of expertise; and
  - c. to provide such additional assistance as the Board may reasonably require,  
to determine a matter in issue.
4. I acknowledge that the duty referred to above prevails over any obligation which I  
may owe to any party by whom or on whose behalf I am engaged.

Date: February 1, 2017

  
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 Signature

