

## 1.0 EXECUTIVE SUMMARY

The Phase One Environmental Site Assessment conducted for this Site consisted of a historical records review, interviews and a site reconnaissance.

At the time of this Report the Site was occupied by a single storey community use building located toward the northwest corner of the Site. In addition, two [2] 1½-storey dwellings with a basement, and a 1½-storey commercial use building with a basement and a detached garage were erected along the eastern portion of the property. The remainder of the Site was comprised primarily of an asphaltic-concrete covered parking lot structure with some landscaped areas around the perimeter of the Site.

In addition, there were no readily available records that indicate any past industrial or commercial operations have occurred on the Site.

With respect to the subject property, the previous Phase One ESA and Phase Two ESA conducted by this office indicated an area of fill material with elevated levels of certain metals parameters [specifically EC and SAR] to be present on the Site. As such, the fill material is considered a PCA.

With respect to the neighbouring and nearby properties, the Phase One ESA research revealed a nearby property [101 Masonry Court] that historically undertook operations that are considered PCAs that may cause an APEC on the Site.

However, as mentioned in this Report, a former Phase One ESA and Phase Two ESA with intrusive soil and groundwater background environmental testing did not indicate any exceedances of the applicable Table 3 Standards for the Contaminants of Concern. In addition, no visual or olfactory evidence of a suspected adverse environmental impact to the retrieved soil and groundwater samples was documented during the previous Phase Two ESA and Geotechnical Investigation. In addition, it is noted that an RSC was previously submitted and acknowledged for this off-site property, which indicates that the property met the applicable Ontario Regulation 153/04 [as amended] site condition standard at the time. Given the above, the former operation(s) on this property are not considered a significant environmental concern to the Site.

With the exception of the above, the lands in the general vicinity of the Site are comprised of commercial, residential, and vacant lands that based on the information currently available to SOIL-MAT ENGINEERS are not anticipated to have an adverse environmental impact on the Site.

Based on the findings of the Phase One Environmental Site Assessment, SOIL-MAT ENGINEERS & CONSULTANTS LTD. find the potential of Site contamination to be considered **MEDIUM** and therefore recommend that additional investigations **ARE** required at this time.



The areas of concern identified during this Phase One ESA are listed below:

PCA Number	PCA Description	Location of the PCA
30	Importation of Fill Material of Unknown Quality	<ul style="list-style-type: none"> <li>A former Phase Two ESA conducted for the Site by this office revealed an area of fill material with elevated levels of certain metals parameters.</li> </ul>

To reduce SOIL-MAT ENGINEERS' degree of uncertainty associated with the environmental liabilities listed above, further assessment activities are recommended. Each environmental liability, and our rationale for further assessment activities, is provided on the following page:

Environmental Liability	PCA#	Recommendation	Rationale
Fill Material of Unknown Quality	30	Advance of a series of boreholes to delineate the vertical and lateral extent of the fill material.	Confirm or refute that the pre-existing fill material is suitable for use on the Site in terms of the environmental characteristics of the fill with respect to the applicable site condition standards. The COCs should include EC, and SAR.

Although not considered an environmental liability to the Site, given the construction date of the on-Site buildings, it is possible that designated substances may be present in the buildings. As such, it is recommended that a non-intrusive designated substance survey of the building be undertaken before any planned demolition or renovation activities that may disturb building materials to identify where possible, designated substances that may be present in the building.

In addition to the above, this Office should be contacted if any additional suspected groundwater well is encountered during future construction activities to make arrangements for the water well as well as the known wells to be abandoned as per Ontario Regulation 903 – Water Wells.



## 2.0 INTRODUCTION

LIV COMMUNITIES retained SOIL-MAT ENGINEERS & CONSULTANTS LTD. [SOIL-MAT ENGINEERS] to conduct a Phase One Environmental Site Assessment [ESA] for the properties located at 1085 Clearview Avenue and 1082, 1086 and 1090 St. Matthews Avenue in the City of Burlington, Ontario, hereinafter referred to as the 'Site'.

### 2(A) PHASE ONE PROPERTY INFORMATION

The Phase One ESA property [the "Site"] is comprised of the following parcels of land:

1. 1082 St. Matthews Avenue and 1085 Clearview Avenue, Burlington, Ontario [the property identification number (PIN) is '07122-0021'.]
2. 1086 St. Matthews Avenue, Burlington, Ontario [the property identification number (PIN) is '07122-0026'.]
3. 1090 St. Matthews Avenue, Burlington, Ontario [the property identification number (PIN) is '07122-0027'.]

The property owner for all parcels listed above is 'LIV Developments Ltd'.

At the time of this Report the 1085 Clearview property was occupied by a single storey community use building located toward the northwest corner of the Site. The remainder of the Site was comprised primarily of an asphaltic-concrete covered parking lot structure with some landscaped areas around the perimeter of the Site. In addition, the Matthews Avenue properties are occupied by two [2] 1½-storey dwellings with a basement, and a 1½-storey commercial use building with a basement and a detached garage were erected along the eastern portion of the property.

The Site was bound to the north by Masonry Court, to the east by St. Matthews Avenue, to the south by residential properties, and to the west by Clearview Avenue.

For descriptive purposes, Clearview Avenue has been designated as having a north-south alignment.

The legal description of the parcel identified with municipal addresses 1082 St. Matthews Avenue and 1085 Clearview Avenue is "Lots 26, 27 and 28, Plan PF753; Lot 64, Plan PF665; City of Burlington".

The legal description of the parcel identified with municipal address 1086 St. Matthews Avenue is "Lot 65, Plan PF665; City of Burlington".

The legal description of the parcel identified with municipal address 1090 St. Matthews Avenue is "Lot 66, Plan PF665; City of Burlington".

The geographic coordinates of the Site using a hand-held global positioning unit are [NAD 83] 17T 592450E/ 4797650N.

A general site location drawing and overview of the Phase One ESA study area are included in Appendix 'A' for reference.



### 3.0 SCOPE OF INVESTIGATION

The Phase One ESA follows the protocol outlined in *Ontario Regulation 153/04 [as amended]*, which suggests a four-step approach to Phase One Environmental Site Assessments, including the following;

1. RECORDS REVIEW: including aerial photographs, property use records, title search, previous Phase One ESA reports, regulatory agency documentation, company records, Site specific geotechnical reports and any other relevant material;
2. SITE VISITATION: including a visual reconnaissance of the Site, suspect adjacent properties, and the different land uses within the vicinity of the Site;
3. INTERVIEWS: including persons that may have pertinent information with regard to the Site, including contacts from the City of Burlington, Ministry of Environment, Conservation and Parks [MOE], and current / previous land owners, etc.;
4. EVALUATIONS: Based on the information gathered, a professional evaluation of the property is presented in a final Phase One ESA Report.

*Ontario Regulation 153/04 [as amended]* lists fifty-nine [59] potentially contaminating activities [PCAs] that require intrusive assessment activities, i.e. a Phase Two ESA, to determine if an adverse environmental impact is present on the Site if a PCA is found to have occurred on the Phase One ESA Site. In some circumstances a Phase Two ESA may be required if a PCA has occurred on a neighbouring or nearby property within the Phase One ESA study area if deemed necessary by the Qualified Person [QP] overseeing the Phase One ESA. It is noted that under *Ontario Regulation 153/04 [as amended]* the mandatory Phase Two ESA activities apply only to properties that are subject to a Record of Site Condition.

## 4.0 RECORDS REVIEW

### 4(a)i PHASE ONE ESA STUDY AREA DETERMINATION

The Phase One ESA Study Area consists of the lands generally in a 250-metre radius from the limits of the Phase One ESA property. These lands are primarily comprised of a mixture of retail commercial, residential, and vacant lands.

The research undertaken during this Phase One ESA revealed information that suggests there is a PCA on nearby properties that may contribute to an area of potential environmental concern [APEC] on the Phase One property.

Additional information, specific to the nature of the land use of the properties of interest in the Phase One ESA Study Area is presented in Section 3.2, 3.3, and 3.4 of this Report.

### 4(a)ii FIRST DEVELOPED USE DETERMINATION

Based on the available information compiled during the completion of this Report, including City directories, aerial photographs, topographic and fire plans, etc., the first developed use of the Site was between 1938 and 1951 as residential lands.

### 4(a)iii FIRE INSURANCE PLANS

The Underwriter's Survey Bureau Limited Fire Insurance Plans were reviewed for the purpose of identifying structures, building materials and/ or underground storage tanks that may have been present on/ or near the Site. A summary of SOIL-MAT ENGINEERS' findings is present below:

Date of Plan	Findings
Sept. 1971	One underground storage tank [UST] is illustrated on an auto service station property located at 71 Plains Road East, approximately 270 metres southeast from the Site. Given the distance between this property and the Site and the location of the property to the Site with respect to the inferred ground water flow direction, i.e. down-gradient, an adverse environmental impact to the Site from this property is considered remote.
Sept. 1971	Two USTs are illustrated at a gas bar located at 114 St. Matthews Avenue, approximately 100 metres north-northeast from the Site. Given the distance between this property and the Site and the location of the property to the Site with respect to the inferred ground water flow direction, i.e. trans-gradient, an adverse environmental impact to the Site from this property is considered remote.
Sept. 1971	A concrete block manufacturing company located at 114 St. Matthews Avenue, approximately 100 metres north-northwest from the Site. Given the distance between this property and the Site and the location of the property to the Site with respect to the inferred ground water flow direction, i.e. up-gradient, there may be an adverse environmental impact to the Site from this property.



Date of Plan	Findings
Sept. 1971	Greenhouses are illustrated at 1041 St. Matthews Avenue, located approximately 180 metres east-southeast from the Site. Given the distance between this property and the Site and the location of the property to the Site with respect to the inferred ground water flow direction, i.e. down-gradient, an adverse environmental impact to the Site from this property is considered remote.

#### 4(a)iv CHAIN OF TITLE

A representative of SOIL-MAT ENGINEERS undertook a title search of the Site at the Land Registry Office in Milton, Ontario.

The title search revealed J. Cooke (Concrete Blocks) Ltd. as a past owner of the Site that may be considered a potential liability on the Site, however, all other documentation does not suggest that any industrial operations have occurred on the Site.

Aside from the above, the title search of the Site did not reveal any past owners of the Site that may suggest there is a potential environmental liability on the Site.

The 1085 Clearview Ave. and 1082 St. Matthews Ave. portion of the Site was owned by Hamilton Area Meeting Rooms Association and the 1086 and 1090 St. Matthews Ave. portion of the Site was owned by LIV Developments Ltd. at the time of the title search.

The chain of previous ownership is presented below:

Owner – Lots 26 & 27	Occupied
Hamilton Area Meeting Rooms Association	October 19, 1981 – Present
Zykra Enterprises Ltd. [J. Cooke Blocks (Aldershot) Ltd.]	September 8, 1955 – October 19, 1981
Donald L. Grierson & J. Cooke (Concrete Blocks) Ltd.	September 8, 1955
The Director, The Veterans Land Act & J. Cooke (Concrete Blocks) Ltd.	May 10, 1947 – September 8, 1955
George D. Filman & The Director, The Veterans Land Act	January 22, 1947 – May 10, 1947
George D. Filman	December 31, 1924 – January 22, 1947
Robert L. Scott	October 27, 1923 – December 31, 1924
Mabel A. Thomson	August 3, 1912 – October 27, 1923
Alexander W. Brown	November 27, 1880 – August 3, 1912
Alexander Brown	November 29, 1854 – November 27, 1880
William Applegarth	December 2, 1833 – November 29, 1854
Crown	Up to December 2, 1833



<b>Owner – Lots 28 &amp; 64</b>	<b>Occupied</b>
Hamilton Area Meeting Rooms Association	November 10, 1988 – Present
Karen Aspden	February 7, 1986 – November 10, 1988
Ian Gunn + Karen Aspden	May 3, 1976 – February 7, 1986
Conrad Kilthan & Cecile Kilthan	December 4, 1964 – May 3, 1976
Conrad Kilthan	April 5, 1961 – December 4, 1964
Conrad Kilthan & Caroline Kilthan	July 19, 1955 – April 5, 1961
George D. Filman	December 31, 1924 – July 19, 1955
Robert L. Scott	October 27, 1923 – December 31, 1924
Mabel A. Thomson	August 3, 1912 – October 27, 1923
Alexander W. Brown	November 27, 1880 – August 3, 1912
Alexander Brown	November 29, 1854 – November 27, 1880
William Applegarth	December 2, 1833 – November 29, 1854
Crown	Up to December 2, 1833

<b>Owner – Lot 66</b>	<b>Occupied</b>
LIV Developments Ltd.	July 31, 2018 - Present
Ivan Norbert and Linda Christine Fernandez	March 30, 1984 – July 31, 2018
Ronald J. Kallman	December 15, 1978 – March 30, 1984
Zykra Enterprises [J. Cooke Blocks (Aldershot) Ltd.]	January 17, 1962 – December 15, 1978
J. Cooke (Concrete Blocks) Ltd.	May 15, 1946 – January 17, 1962
Jacob Cooke	June 28, 1945 – May 15, 1946
Albert G. and Mary G. Scheer	November 5, 1924 – June 28, 1945
Albert G. Scheer	May 2, 1922 – November 5, 1924
John Sproat	December 10, 1915 – May 2, 1922
Alexander W. Brown	November 27, 1880 – December 10, 1915
Alexander Brown	November 29, 1854 – November 27, 1880
William Applegarth	December 2, 1833 – November 29, 1854
Crown	Up to December 2, 1833

<b>Owner – Lot 65</b>	<b>Occupied</b>
LIV Developments Ltd.	July 31, 2018 - Present
Bozenna Marshall	February 11, 2000 – July 31, 2018
James and Bozenna Marshall	September 29, 1987 – February 11, 2000
Zykra Enterprises [J. Cooke Blocks (Aldershot) Ltd.]	January 17, 1962 – September 29, 1978
J. Cooke (Concrete Blocks) Ltd.	May 15, 1946 – January 17, 1962
Jacob Cooke	June 28, 1945 – May 15, 1946
Albert G. and Mary G. Scheer	November 5, 1924 – June 28, 1945
Albert G. Scheer	May 2, 1922 – November 5, 1924
John Sproat	December 10, 1915 – May 2, 1922
Alexander W. Brown	November 27, 1880 – December 10, 1915
Alexander Brown	November 29, 1854 – November 27, 1880
William Applegarth	December 2, 1833 – November 29, 1854
Crown	Up to December 2, 1833

A copy of the title search is included in Appendix 'B' for reference.





#### 4(a)v ENVIRONMENTAL REPORTS

SOIL-MAT ENGINEERS contacted the City of Burlington Planning Department to request a copy of previous environmental reports for the Site that may be on file with the City. However, the results of the request were not available at the time of writing.

The e-mail correspondence with the City of Burlington is included in Appendix 'C' for reference.

In addition, a search of the MOE's *Brownfields Environmental Site Registry* did not reveal a previous Phase One ESA that may have been undertaken on the Site. In addition to the above, it should be noted that a Record of Site Condition has been filed for the former concrete plant to the northwest from the Site [RSC #222207]. The COCs identified in the RSC for the property are petroleum hydrocarbons [PHCs], volatile organic compounds [VOCs], polycyclic aromatic hydrocarbons [PAHs], and metals.

In addition to the above, SOIL-MAT ENGINEERS recently completed a Phase One ESA for a portion of the subject Site in late 2016 [refer to SOIL-MAT ENGINEERS report no.: SM 166997-E, dated November 23, 2016]. The findings of the Phase One ESA report are outlined below:

*At the time of this Report the Site was comprised of a roughly rectangular shaped parcel of land with no readily available records that indicate any past industrial or commercial operations having occurred on the Site.*

*With respect to the neighbouring and nearby properties, the Phase One ESA research revealed a nearby property [101 Masonry Court] that historically undertook operations that are considered PCAs that may cause an APEC on the Site. However, as stated in section 3.11 of this Report, limited background environmental testing did not indicate any exceedances of the applicable Table 3 Standards for the secured soil samples. In addition, no visual or olfactory evidence of a suspected adverse environmental impact to the retrieved soil samples was documented during the Geotechnical Investigation. In addition, it is noted that an RSC was previously submitted and acknowledged for this off-site property, which indicates that the property met the applicable Ontario Regulation 153/04 [as amended] site condition standard at the time. Given the above, the former operation(s) on this property not considered a significant environmental concern to the Site.*

*With the exception of the above, the lands in the general vicinity of the Site are comprised of commercial, residential, and vacant lands that based on the information currently available to SOIL-MAT ENGINEERS are not anticipated to have an adverse environmental impact on the Site.*

*Based on the findings of the Phase One Environmental Site Assessment, SOIL-MAT ENGINEERS & CONSULTANTS LTD. find the potential of Site contamination to be considered **MEDIUM** and therefore recommend that additional investigations **ARE** required at this time, pending the results of the Ministry of the Environment database search which will be forwarded to LIV COMMUNITIES under a separate cover once they are received in our Office.*



The areas of concern identified during this Phase One ESA are listed below:

<b>PCA Number</b>	<b>PCA Description</b>	<b>Location of the PCA</b>
30	Importation of Fill Material of Unknown Quality	<ul style="list-style-type: none"> <li>A geotechnical investigation was conducted on the Site which indicated the presence of fill material at one borehole location.</li> </ul>

To reduce SOIL-MAT ENGINEERS' degree of uncertainty associated with the environmental liabilities listed above, further assessment activities are recommended.

Each environmental liability, and our rationale for further assessment activities, is provided on the following page:

<b>Environmental Liability</b>	<b>PCA#</b>	<b>Recommendation</b>	<b>Rationale</b>
Fill Material of Unknown Quality	30	Advance of a series of boreholes to delineate the vertical and lateral extent of the fill material.	Confirm or refute that the pre-existing fill material is suitable for use on the Site in terms of the environmental characteristics of the fill with respect to the applicable site condition standards. The COC should include Metals and Inorganics.

Given the above findings of the Phase One ESA, a Phase Two ESA was conducted for the same portion of the subject Site in mid 2017 by this office [refer to SOIL-MAT ENGINEERS report no.: SM 177469-E, dated July 24, 2017]. Although not identified as a PCA in the initial Phase One ESA, the off-site concrete plant was addressed with additional intrusive sampling in the Phase Two ESA. The findings and recommendations of the Phase Two ESA report are outlined below:

SOIL-MAT ENGINEERS were retained by LIV Communities to undertake a Phase Two ESA programme on the Site to assess potential adverse environmental impact(s) to the soil and groundwater mediums as a result of two [2] PCAs associated with the Site and neighbouring lands.

The results of our Phase Two ESA findings are summarized below:

#### **POLYCYCLIC AROMATIC HYDROCARBON [PAH] TESTING: SOIL**

The Phase Two ESA activities carried out by Soil-Mat Engineers did not reveal any PAH exceedances on the property at the select sampled locations.

The sample locations are illustrated on Drawing.: 5, Appendix A.

**METAL TESTING: SOIL**

The Phase Two ESA activities carried out by SOIL-MAT ENGINEERS revealed elevated levels of Sodium Adsorption [SAR] and Electrical Conductivity [EC] parameters in the sand fill and upper levels of the native sand in the vicinity of Borehole Nos. 204 and 206.

The elevated levels of SAR and EC are likely associated with the effects of historical application of deicing salt to the parking lot area of the facility. It is noted that the lateral and vertical extent of the soil exhibiting an adverse SAR and/or EC impact was not fully delineated during this round of Phase Two ESA testing.

The sample locations with noted metal exceedance(s) are illustrated on Drawing.: 3, Appendix A.

**VOLATILE ORGANIC COMPOUND TESTING: SOIL**

The Phase Two ESA activities carried out by SOIL-MAT ENGINEERS did not reveal a VOC exceedance in the soil on the property.

The sample locations are illustrated on Drawing.: 4, Appendix A.

**PETROLEUM HYDROCARBON TESTING: SOIL**

The Phase Two ESA activities carried out by SOIL-MAT ENGINEERS did not reveal a PHC exceedance in the soil on the property.

The sample locations are illustrated on Drawing.: 2, Appendix A

**GROUNDWATER ANALYTICAL DATA**

SOIL-MAT ENGINEERS' final Phase Two ESA activities undertaken on the Site [to date] did not reveal any exceedances of the PHC, PAH, Metal and VOC groupings in the groundwater medium.

As noted in Section 5.7 of this Report, the initial sampling event of our groundwater monitoring well 'MW205' exhibited an elevated level of PHCs, as Fraction F2, in the initial sampling event. However, resampling the groundwater at this location, after purging the monitoring well a second time, resulted in no exceedances of the Table 3 site condition standards, with all of the tested parameters being reported below the laboratory method detection limits.

As such, it is the opinion of SOIL-MAT ENGINEERS that the initial exceedances can be considered an anomaly.

The groundwater sampling locations are illustrated on Drawing.: 6 to 9, Appendix A.

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**PROPOSED FUTURE RESIDENTIAL REDEVELOPMENT**

*Given the proposed future use of the Site [residential], the Site would be subject to a mandatory Record of Site Condition [RSC] filing. In order to complete and file an RSC the properties will either need to meet the applicable Ontario Regulation 154/04 [as amended] soil and groundwater standards or be subjected to some level of risk assessment activities. In either scenario, additional intrusive sampling is recommended to complete the following:*

- Further delineate the lateral and vertical extent of the elevated levels of SAR and EC in the soil medium on the Site. If removal of the fill is pursued, the additional lateral and vertical assessment activities would also be beneficial in determining an approximate volume of soil material to be removed for remedial purposes.*
- The on-Site materials may be remediated employing a traditional “dig and dump” operation. In this scenario, confirmatory soil sampling would be undertaken on the sidewalls and floor [base] of the remedial excavation. The number of samples would be determined based on the final dimensions of the remedial excavation.*
- In the event that the Site is subjected to some level of Risk Assessment [whether a modified generic RA or a Site Specific RA], additional intrusive sampling will be required to establish the lateral and vertical extent of the impact(s) to the soil mediums. It is also noted, that although still preliminary in nature, the laboratory analytical test results [to date] indicate that some level of soil removal and future control measures, such as hard or soft caps, would be required to support the acceptance of an MGRA or SSRA for the Site.*

Given the above environmental reports, the off-site concrete plant identified in the above sections as a PCA is not considered to be an environmental liability to the Site at this time. However, the previous reports did identify an area of fill material on the Site with elevated levels of select COCs, specifically ‘EC’ and ‘SAR’. As such, this fill material is considered a PCA and will need to be addressed with further intrusive sampling.

In addition to the above environmental reports, SOIL-MAT ENGINEERS’ were retained by LIV COMMUNITIES in 2016 to undertake a Geotechnical Investigation of the Site. The geotechnical investigation included the advancement of five [5] sampled boreholes to depths ranging from approximately 6.6 to 11.1 metres below ground surface on September 26, 2016. [refer to SOIL-MAT ENGINEERS’ Report No.: SM 166996-G].

A summary of the geotechnical investigation findings is provided below.

**Pavement Structure**

All of the boreholes were advanced through the pavement structure of the existing paved parking areas around the existing building. The existing pavement structure was found to consist of approximately 75 to 90 millimetres of asphaltic concrete overlying 150 to 225 millimetres of compact granular base.

### **Sand Fill**

A deposit of sand fill was encountered beneath the pavement structure in Borehole No. 4. This fill deposit was brown in colour, medium in gradation, contained trace to some gravel and trace silt, in a generally very loose state. The fill deposit was proven to a depth of approximately 4 metres beneath the existing pavement surface where encountered.

### **Sand**

Native brown sand was encountered beneath the pavement structure and/or fill material at all borehole locations. This granular soil contains trace to some gravel and trace silt, with occasional cobbles. The sand is medium in gradation, and is generally in a loose to dense state. The sand was proven to depths of approximately 4.8 to 6.4 metres.

### **Clayey Silt**

Native clayey silt was encountered beneath the sand at all borehole locations. The clayey silt encountered was reddish brown in colour, contained trace to some sand and gravel, and was generally firm to stiff in consistency. The clayey silt was proven to termination in Borehole Nos. 1 through 4, and to approximately 10.1 metres in Borehole No. 5.

### **Sand and Gravel**

Coarse sand and gravel was encountered in Borehole No. 5 beneath the clayey silt, at a depth of approximately 10.1 metres. This coarse granular soil is brown, and generally in a compact state. The sand and gravel was proven to termination at a depth of 11.1 metres.

## **4(b) ENVIRONMENTAL SOURCE INFORMATION**

1. National Pollutant Release Inventory: No records were found for the Site or properties within the Phase One ESA Study.
2. PCB Storage Inventory: A review of the Ministry of Environment and Energy's "Ontario Inventory of PCB Storage Sites", October, 1991, does not indicate any major or minor storage sites within a 1.5km radius of the Site. It is noted that although the inventory is comprehensive not all of the storage sites are listed in the inventory.
3. Environmental Compliance Approvals, Permit to Take Water, Certificate of Property Use: The EcoLog report did not reveal any of the above listed items for the property.
4. Coal Gasification Plants: No Municipal Coal Gasification Plants or Coal Tar Distillation Plants were in operation in the area.



5. Records Concerning Environmental Incidents, Orders, Offences, Spills, Discharges of Contaminants or Inspections Maintained by the MOE: The Ministry of the Environment's Freedom of Information and Protection of Privacy Office was contacted to determine if any spills have been reported in the area of the Site, if any buried tanks are recorded to be on-site, or if there are any orders and/or notices on file outstanding against the Owner of the Site. The Ministry does not have any records of: Spills in the area of your property; Outstanding orders / notices against; Buried private use gasoline / diesel fuel storage tanks on the Phase One ESA property.

We should note that spill records are only available from 1988 to present and most are only reported voluntarily. In addition, underground storage tanks installed prior to 1990 are not registered with the Ministry. SOIL-MAT ENGINEERS' MOE database search request and response is attached in Appendix 'D' for reference.

6. Waste Management Records: No records were found for the Site or properties within the Phase One ESA Study.
7. Reports Submitted to the MOE: No records were found for the Site or properties within the Phase One ESA Study.
8. Retail Fuel Storage Tanks: SOIL-MAT ENGINEERS contacted Ms. Ruchi Chohan of the T.S.S.A. for a previous Phase One ESA for the property conducted by this office in 2016 to undertake a search of the Site and neighbouring properties for the registered presence of any underground storage tanks on these properties. During the 2016 search, the T.S.S.A did not have records on file of any underground storage tanks located on the Site.

The T.S.S.A. has a record of the following:

**101 Masonry Court.** There are records of two [2] expired USTs approximately 100 metres northwest [up-gradient] from the Site. Although this property is up-gradient from the Site, this property is not considered a significant environmental concern to the Site for the following reasons:

Although SOIL-MAT ENGINEERS' is not in receipt of the actual report, a remediation programme was undertaken on this property to support the filing and acknowledgement of an RSC for this property;

The results of the Phase Two ESA conducted for a portion of the Phase One ESA property in 2017 by this office did not reveal any exceedances of the applicable Table 3 RPI Standards or any visual or olfactory evidence of a suggested PHC or VOC impact in the retrieved samples.

**14 Plains Road East.** There are records of three [3] expired USTs on this property, which is located approximately 450 metres south [down-gradient] from the Site. Given the location of this property to the Site with respect to the inferred ground water flow direction and the distance between this property and the Site, an adverse environmental impact to the Site from this property is considered remote.



An updated search conducted for the current Phase One ESA report did not reveal any additional information that would change the findings of the T.S.S.A records search conducted for the previous Phase One ESA as mentioned above.

It is however noted that the T.S.S.A. does not have records of USTs installed prior 1987. In addition, “private use” USTs were not registered with the agency until 1990, and even then many owners of “private use” USTs do not register the tanks with T.S.S.A.

The e-mail correspondence with the T.S.S.A. is included in Appendix ‘E’ for reference.

9. Notices and Instruments Posted to the MOE Registry: No records were found for the Site.
10. Identification of Areas of Natural Significance [Ministry of Natural Resources]: No records were found for area(s) of natural significance on the Site or adjacent properties.
11. Landfill Information Maintained by the MOE: A review of the Ministry of Environment and Energy's “Waste Disposal Site Inventory”, June 1991, indicates one [1] active and no inactive waste disposal sites within a 2km radius of the Site. An updated list at the Ministry of Environment website [[http://www.ene.gov.on.ca/environment/en/monitoring\\_and\\_reporting/limo/landfills/index.htm](http://www.ene.gov.on.ca/environment/en/monitoring_and_reporting/limo/landfills/index.htm)] shows that the active landfill in the June 1991 “Waste Disposal Site Inventory” is now listed as closed.

A list of the landfill property is provided below for reference.

MOE Site No.	Municipality	Location	Date Closed	Class	Distance to Site
A 210102	Burlington	Part Lot 4, Concession 1	After 1991	A3	1.76km NW

With respect to the inactive waste disposal site, class ‘A3’ sites are registered to receive municipal and domestic wastes and are located in an urban setting. In the case of the class ‘A3’ waste disposal site listed above, the property has been closed for less than 22 years. Given the distance between this property and the Site an adverse environmental impact to the Site from this property is considered remote.

It is noted that not all of the inactive and active landfill sites are listed in the document.

12. EcoLog ERIS Database Search: A review of historical records and regulatory agency databases was completed for the Site and lands located within 250 metres from the boundaries of the Phase One ESA Site in 2016 for the previous Phase One ESA conducted by this office that included coverage for the current extent of the Site. The report includes information from the following sources:
  - Abandoned Aggregate Inventory





- Aggregate Inventory
- Borehole
- Certificates of Approval
- Environmental Registry
- ERIS Historical Searches
- Fuel Storage Tanks
- Ontario Regulation 347 Waste Generators Summary
- Private and Retail Fuel Storage Tanks
- Record of Site Conditions
- Ontario Spills
- Water Well Information Systems

The EcoLog ERIS database search report revealed limited PCAs on nearby properties. However, given the location of these properties to the Site with respect to the inferred groundwater flow direction and distance between these properties and the Site an adverse environmental impact to the Site is considered remote.

A copy of the EcoLog ERIS Report is included in Appendix 'F' for reference.

#### 4(c) PHYSICAL SETTING SOURCES

1. Aerial Photographs: Aerial photographs from 1951, 1954, 1959, 1978, 1988, 2004, 2009, and 2017 were available for the Site and surrounding lands and were reviewed by SOIL-MAT ENGINEERS.

A summary of information obtained from the photographs is presented below:

Aerial Photo [scale]	Site Description	Description of Adjacent Lands
1951 [1:4,500]	The Site is occupied by a single dwelling at the west end of the Site and three [3] dwellings erected on the eastern portion of the Site. The remainder of the Site is undeveloped.	The surrounding lands are comprised of a mixture of residential and vacant agricultural land. A concrete plant / quarry is present to the north of the Site, and sparse commercial lands are present to the southeast of the Site along Plains Road East. Greenhouses are also present to the east of the Site.
1954 [1:5,750]	There are no significant changes to the Site.	There are no significant changes to the surrounding lands.
1959 [1:4,100]	There are no significant changes to the Site.	There is residential development to the east and northeast from the Site as well as further commercial development along Plains Road East.
1978 [1:4,400]	There are no significant changes to the Site.	There are no significant changes to the surrounding lands.





Aerial Photo [scale]	Site Description	Description of Adjacent Lands
1988 [1:5,200]	The dwelling on the western portion of the Site has been demolished and the community use building that currently occupies the western portion of the Site is now present.	There are no significant changes to the surrounding lands.
2004 [1:3,800]	There are no significant changes to the Site.	The concrete plant to the north is no longer present, and there is commercial development to the south and southwest.
2009 [1:3,800]	There are no significant changes to the Site.	With the exception of a large parking lot being present to the north and the greenhouses to the east being demolished and replaced with residential lands, there are no significant changes to the surrounding lands.
2017 [1:3,850]	There are no significant changes to the Site.	There are no significant changes to the surrounding lands.

With respect to the greenhouses listed above, given the location of the property to the Site with respect to the inferred ground water flow direction [down-gradient] and the distance between this property and the Site [approximately 180 metres east-southeast from the Site], an adverse environmental impact to the Site from these properties is considered remote.

With respect to the concrete plant listed above, given the location of this property to the Site with respect to the inferred ground water flow direction [up-gradient] and the distance between this property and the Site [approximately 100 metres northwest], the operations carried out on this property are considered PCAs that may result in an APEC on the Site. The COCs associated with this property are petroleum hydrocarbons [PHCs], volatile organic compounds [VOCs], polycyclic aromatic hydrocarbons [PAHs], and metals.

With the exception of the above, the review of the noted aerial photographs did not reveal any information that would suggest there is a potential environmental liability on the Site.

The aerial photographs are included in Appendix 'G' for reference.

2. Topography, Hydrology, Geology: Readily available topographic maps for the Site and Phase One ESA study area were reviewed as part of this Phase One ESA and revealed the following information:



Map Year [Scale]	Site Description	Description of Surrounding Lands
1909 [1:63,360]	There are no buildings illustrated on the Site.	The Phase One ESA Study Area is comprised of primarily undeveloped lands with sparse residential.
1938 [1:63,360]	There are no buildings illustrated on the Site.	The Phase One ESA Study Area is comprised of primarily undeveloped lands with some development to the south and along Plains Road East. A quarry is now present to the north-northwest of the Site.
1968 [1:50,000]	There are no buildings illustrated on the Site, however, the Site is illustrated in a shaded area of the map which indicates a 'built up' or developed area.	The Phase One ESA Study Area is comprised of primarily developed lands with a quarry illustrated to the northwest of the Site.
1999 [1:50,000]	There are no buildings illustrated on the Site, however, the Site is illustrated in a shaded area of the map which indicates a 'built up' or developed area.	The Phase One ESA Study Area is comprised of primarily developed lands with a concrete plant illustrated to the northwest of the Site.

As noted in Section 3.2 above, given the location of the former concrete plant property to the Site with respect to the inferred groundwater flow direction [up-gradient] and the distance between the property and the Site [approximately 100 metres northwest], the operations carried out on this property are considered PCAs that may result in an APEC on the Site.

With the exception of the above, the review of the topographic maps did not reveal any PCAs that would suggest there is a potential environmental liability on the Site.

A copy of the topographic maps and each source information is included in Appendix 'H' for reference.

A review of the Ministry of Northern Development and Mine's "Quaternary Geology of the Hamilton Area, Southern Ontario Sheet Map M2509" and the "Paleozoic Geology of the Hamilton Area, Southern Ontario Sheet Map M2336", revealed the Site to be underlain by lacustrine and outwash sand, in turn, underlain by Halton Till: clay or silt till and then Upper Ordovician Queenston Formation shale bedrock. This has been borne out by SOIL-MAT ENGINEERS' geotechnical experience in the general vicinity of the Site and on the Site.

The project area is generally flat and level with surface water runoff being directed towards several on-site catch basins as well as to the east towards St. Matthews Avenue.

Regional groundwater flow is expected to the southeast toward Lake Ontario.

Surface water was not encountered on the Site during SOIL-MAT's Site visits.

3. **Fill Materials:** The reconnaissance of the Site did not reveal any areas that may have received any suspected fill material. However, as noted in Section 4(a)v of this Report, fill material was encountered to approximately 4 metres depth in Borehole No. 4 during a previous geotechnical investigation conducted for the site.
4. **Water Bodies and Areas of Natural Significance:** Surface water was not encountered on the Phase One ESA property or within the Phase One ESA Study Area. In addition, no areas of natural significance were identified on the Phase One ESA property or within the Phase One ESA Study Area.
5. **Well Records:** The reconnaissance of the Site did not reveal any obvious visual evidence of a suspected cistern.

However, a number of monitoring wells were noted during the reconnaissance of the Site. These wells were installed in conjunction with the Phase Two ESA conducted in 2017 by this office for a portion of the subject Site. In total, three [3] monitoring wells were noted on the property with all wells terminating at a depth of 7.62 metres below ground surface.

A review of the Ministry of the Environment water well records revealed no potable ground water wells or monitoring wells on the Phase One ESA Site.

Our review of the MOE water well records did not reveal any potable ground water wells in the Phase One ESA Study Area. The records did reveal five [5] monitoring wells and one drilled water well for industrial purposes within the Phase One ESA Study Area. The monitoring wells are located between 100 and 250 metres from the Site and range from 2.1 to 8.2 metres in depth. The industrial well is located 210 metres northwest from the Site and is reported to be 68.6 metres in depth. The purpose of this well was for washing gravel.

#### **4(d) SITE OPERATING RECORDS**

1. **Title of the Information Sheet or Document:** Not Applicable
2. **Description of Data, Analysis or Findings as the Information Sheet or Document relates to the Phase One ESA Property:** Not Applicable



## 5.0 INTERVIEWS

At the time of this Report the 1085 Clearview property was occupied by a single storey community use building located toward the northwest corner of the Site. The remainder of the Site was comprised primarily of an asphaltic-concrete covered parking lot structure with some landscaped areas around the perimeter of the Site. In addition, the Matthews Avenue properties are occupied by two [2] 1½-storey dwellings with a basement, and a 1½-storey commercial use building with a basement and a detached garage were erected along the eastern portion of the property.

In addition, records indicate that the property was first developed as residential lands between 1938 and 1951 as residential lands, with no pertinent information that would suggest the presence of a potential contaminating activity [PCA] on the Site or information with the exception of fill identified during previous investigations on the site.



## 6.0 SITE RECONNAISSANCE

### 6.0 (A) GENERAL REQUIREMENTS:

Reporting Requirements	SOIL-MAT ENGINEERS' Details
Date and Time of the Reconnaissance	September 26, 2018 [10:00am to 11:00am] and October 2, 2018 [10:00am to 11:00 am] [1082 St. Matthews]
Weather Conditions	The weather conditions at the time of both of the reconnaissance did not limit the visual observations of the Site.
Duration of Site Visit	~1 hour
Enhanced Investigation Property	The Site is not an Enhanced Investigation property
Field Representative	Mr. Peter Markesic [qualifications included in Appendix 'I']

### 6.0(B) SPECIFIC OBSERVATIONS AT PHASE ONE ESA PROPERTY

Reporting Requirements	SOIL-MAT ENGINEERS' Details
Description of Structures and Other Improvements	A single storey community use building with no basement [1085], two [2] 1½-storey dwellings with basements [1086 & 1090], a detached garage [1086 garage], and a 1½-storey commercial use building with basement [1082] A detached single storey garage building was erected on the 1086 St. Matthews Ave parcel.
Description of the Number, Age and Depth of Below-Ground Structures	A single storey community use building with no basement [1085], two [2] 1½-storey dwellings with basements [1086 & 1090], a detached garage [1086 garage], and a 1½-storey commercial use building with basement [1082] A detached single storey garage building was erected on the 1086 St. Matthews Ave parcel.
Details of all tanks (aboveground and underground)	None observed. In addition, the research did not reveal any evidence of past tanks.
Details of any potable and non-potable water sources	The Site is serviced with a municipal water supply.
Buried Utilities	The Site is serviced with hydro, natural gas, water/sewer/storm sewer services, etc. The depth of these service trenches are not anticipated to affect contaminant distribution on the Site.
Existing Buildings: Exit/Entry Points	Access to the buildings on the site are through both rear and front entry points to each structure. In addition, a bay door was located on the garage outbuilding mentioned above.
Existing Buildings: Cooling / Heating System	All: Natural gas furnace / central air
Existing Buildings: Drains, Pits, Sumps, etc.	None observed



Specific Observations at Phase One ESA Property [continued]

Reporting Requirements	SOIL-MAT ENGINEERS' Details
Existing Buildings: Details of any unidentified substances	None observed
Existing Buildings: Details of Stains, Corrosion on Floors other than from Water	None observed
Details of Former and Current Wells	None observed, with the exception of the monitoring wells described previously in this report.
Details of Sewage Works	The Site is serviced with a municipal sewer line.
Details of Ground Surface Cover	Some grass with sparse trees around the perimeter of the Site. Entire parking lot on western portion of Site, driveways to dwellings and commercial use building on eastern portion of the Site.
Details of Former or Current Railway Lines	None observed
Details of Stained Soil, Damaged Vegetation or Pavement	None observed
Details of Stressed Vegetation	None observed
Areas Where Fill and Debris Materials Appear to be Present	None observed; however, fill is present on site as previously described.
PCAs	PCA No.: 30 - Importation of Fill Material of Unknown Quality.

1. Enhanced Investigation Property

Reporting Requirements	SOIL-MAT ENGINEERS' Details
Details of the Operations at the Site	Not Applicable
Hazardous Materials Used/Stored on the Site	Not Applicable
Products Manufactured on the Site	Not Applicable
By-Products and Wastes at the Site	Not Applicable
Raw Materials, including the Handling and Storage	Not Applicable
Details of Drums, Totes, Bins	Not Applicable
Details of Oil/Water Separators	Not Applicable
Details of Vehicle and Equipment Maintenance Areas	Not Applicable
Details of Known Spills	Not Applicable
Details of Liquid Discharge Points	Not Applicable
Details of Operations at the Site [processing or manufacturing and equipment used]	Not Applicable
Details of Hydraulic Lift Equipment	Not Applicable

**6.0 (C) WRITTEN DESCRIPTION OF INVESTIGATION**

The information gathered during was between 1938 and 1951 as residential lands. The first readily available visual aid for the Site is the 1909 topographic map which illustrates the Site undeveloped lands surrounded by sparse residential lands. Other visual aids, including aerial photographs from 1951, 1954, 1959, 1978, 1988, 2004, 2009, and 2017, fire insurance plans from 1971, and topographic maps from 1909, 1938, 1968, and 1999, confirm the development timeline above. The neighbouring and nearby lands to the Site are comprised of a mixture of residential, commercial and vacant lands.



**7.0 REVIEW AND EVALUATION OF INFORMATION**

- (i) Current and Past Uses: SOIL-MAT ENGINEERS’ Table of Current and Past Uses is not included with this Phase One ESA report. However, the report will be updated to include this at the time of filing for the Record of Site Condition.
- (ii) Potential Contaminating Activity: One PCA was identified on the Site and no PCAs were identified in the Phase One ESA Study Area that may result in an APEC, including:

PCA No.: 30 – Importation of Fill Material of Unknown Quality [A former Phase Two ESA conducted for the Site in this office revealed an area of fill material with elevated levels of certain metals parameters, specifically EC and SAR]

- (iii) Areas of Potential Environmental Concern: SOIL-MAT ENGINEERS’ APEC table is presented below:

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on Phase One Property	Potentially Contaminating Activity	Locations of PCA (on-site or off-site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or sediment)
APEC #1	Central portion of the Site	30. Importation of Fill Material of Unknown Quality	On-Site	EC, SAR	Soil

- (iv) Phase One Conceptual Site Model: SOIL-MAT ENGINEERS’ Phase One CSM is not included with this Phase One ESA report. However, the report will be updated to include this at the time of filing for the Record of Site Condition.



## 8.0 CONCLUSIONS

At the time of this Report the Site was occupied by a single storey community use building located toward the northwest corner of the Site. In addition, two [2] 1½-storey dwellings with a basement, and a 1½-storey commercial use building with a basement and a detached garage were erected along the eastern portion of the property. The remainder of the Site was comprised primarily of an asphaltic-concrete covered parking lot structure with some landscaped areas around the perimeter of the Site.

In addition, there were no readily available records that indicate any past industrial or commercial operations have occurred on the Site.

With respect to the subject property, the previous Phase One ESA and Phase Two ESA conducted by this office indicated an area of fill material with elevated levels of certain metals parameters [specifically EC and SAR] to be present on the Site. As such, the fill material is considered a PCA.

With respect to the neighbouring and nearby properties, the Phase One ESA research revealed a nearby property [101 Masonry Court] that historically undertook operations that are considered PCAs that may cause an APEC on the Site.

However, as mentioned in this Report, a former Phase One ESA and Phase Two ESA with intrusive soil and groundwater background environmental testing did not indicate any exceedances of the applicable Table 3 Standards for the Contaminants of Concern. In addition, no visual or olfactory evidence of a suspected adverse environmental impact to the retrieved soil and groundwater samples was documented during the previous Phase Two ESA and Geotechnical Investigation. In addition, it is noted that an RSC was previously submitted and acknowledged for this off-site property, which indicates that the property met the applicable Ontario Regulation 153/04 [as amended] site condition standard at the time. Given the above, the former operation(s) on this property are not considered a significant environmental concern to the Site.

With the exception of the above, the lands in the general vicinity of the Site are comprised of commercial, residential, and vacant lands that based on the information currently available to SOIL-MAT ENGINEERS are not anticipated to have an adverse environmental impact on the Site.

Based on the findings of the Phase One Environmental Site Assessment, SOIL-MAT ENGINEERS & CONSULTANTS LTD. find the potential of Site contamination to be considered **MEDIUM** and therefore recommend that additional investigations **ARE** required at this time.



The areas of concern identified during this Phase One ESA are listed below:

PCA Number	PCA Description	Location of the PCA
30	Importation of Fill Material of Unknown Quality	A former Phase Two ESA conducted for the Site by this office revealed an area of fill material with elevated levels of certain metals parameters.

To reduce SOIL-MAT ENGINEERS' degree of uncertainty associated with the environmental liabilities listed above, further assessment activities are recommended. Each environmental liability, and our rationale for further assessment activities, is provided on the following page:

Environmental Liability	PCA#	Recommendation	Rationale
Fill Material of Unknown Quality	30	Advance of a series of boreholes to delineate the vertical and lateral extent of the fill material.	Confirm or refute that the pre-existing fill material is suitable for use on the Site in terms of the environmental characteristics of the fill with respect to the applicable site condition standards. The COCs should include EC, and SAR.

Although not considered an environmental liability to the Site, given the construction date of the on-Site buildings, it is possible that designated substances may be present in the buildings. As such, it is recommended that a non-intrusive designated substance survey of the building be undertaken before any planned demolition or renovation activities that may disturb building materials to identify where possible, designated substances that may be present in the building.

In addition to the above, this Office should be contacted if any additional suspected groundwater well is encountered during future construction activities to make arrangements for the water well as well as the known wells to be abandoned as per Ontario Regulation 903 – Water Wells.



## 9.0 REPORT LIMITATIONS

Achieving the objectives that are stated in this report has required SOIL-MAT ENGINEERS to derive conclusions based upon the best and most recent information currently available to SOIL-MAT ENGINEERS. No investigative method can completely eliminate the possibility of obtaining partially imprecise information. SOIL-MAT ENGINEERS has expressed professional judgement in gathering and analysing the information obtained and in the formulation of its conclusions.

Information in this report was obtained from sources deemed to be reliable, however, no representation or warranty is made as to the accuracy of this information. To the best of SOIL-MAT ENGINEERS' knowledge, the information gathered from outside sources contained in this report on which SOIL-MAT ENGINEERS has formulated its opinions and conclusions, are both true and correct. SOIL-MAT ENGINEERS assumes no responsibility for any misrepresentation of facts gathered from outside sources.

This report was prepared to assess and document evidence of potential environmental contamination, and not to judge the acceptability of the risks associated with such environmental contamination. Much of the information gathered for this report is only accurate at the time of collection and a change in the Site conditions may alter the interpretation of SOIL-MAT ENGINEERS' findings. Furthermore, the reader should note

that the Site reconnaissance described in this report was an environmental assessment of the Site, not a regulatory compliance or an environmental audit of the Site.

SOIL-MAT ENGINEERS & CONSULTANTS LTD. prepared this Report for the account of the LIV COMMUNITIES. The material in it reflects SOIL-MAT ENGINEERS' best judgement in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. SOIL-MAT ENGINEERS accepts no responsibility for damages, if any suffered by any third party as a result of decisions made or actions based on this report.



We trust that this Phase One Environmental Site Assessment is satisfactory for your purposes. Please feel free to contact the undersigned if you have any questions.

Sincerely,  
SOIL-MAT ENGINEERS & CONSULTANTS LTD.

Handwritten signature of Ross Keiller in blue ink.

Ross Keiller  
Project Manager

Handwritten signature of Ian Shaw in blue ink.

Ian Shaw, P.Eng., QP<sub>esa</sub>  
Review Engineer



Handwritten signature of Keith Gleadall in blue ink.

Keith Gleadall, B.A., EA Dipl.  
Environmental Manager

Distribution: LIV COMMUNITIES [1, plus 1 pdf via email]

Enclosures: Appendix 'A' Conceptual Site Plan and General Site Drawings;  
Appendix 'B' Chain of Title  
Appendix 'C' City of Burlington Correspondence  
Appendix 'D' MOECP Database Search Request and Response  
Appendix 'E' T.S.S.A. Correspondence  
Appendix 'F' Ecolog ERIS Report  
Appendix 'G' Aerial Photographs  
Appendix 'H' Topographic Maps  
Appendix 'I' Qualifications of Assessors