
**Social Impact Review
Proposed Norval Quarry
Brampton Brick Limited**

April 15, 2013

Prepared for:

City of Brampton

Prepared by:

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**H A R D Y
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April 15, 2013

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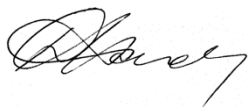
Re: Social Impact Review: Proposed Brampton Brick Limited Norval Quarry

Dear Ms. Rea,

In response to a request from the City of Brampton we have prepared a social impact review of the rezoning and Aggregate Resources Act licence application for in the proposed Norval Quarry, City of Brampton.

In carrying out this review we considered various reports, studies and memoranda (see Bibliography for a complete list of materials reviewed). Much of our original data is based on the *"Socio-economic analysis of the Proposed Brampton Brick Limited Norval Quarry"* prepared by DPRA. Our comments are provided herein. Please do not hesitate to contact me if you have any questions.

Yours very truly,



Dave Hardy, R.P.P.
Principal, Hardy Stevenson and Associates Limited

Contents

1.0	INTRODUCTION	4
2.0	METHODOLOGY	4
2.1	Approach to Assessing Social Impacts	5
2.2	Standard Methodology	5
2.3	Evaluation Criteria.....	6
2.4	Tasks Completed	7
3.0	SCOPE OF SIA ASSESSMENT	7
3.1	Study Area	8
3.2	Relevant Policy	8
3.2.1	Aggregate Resources Act	9
3.2.2	Provincial Standards Policy	9
3.2.3	Provincial Policy Statements.....	9
3.2.4	Peel Region Official Plan	10
3.2.5	City of Brampton Official Plan.....	10
4.0	NORVAL QUARRY PROPOSAL.....	12
4.1	Characterization of the Proposed Norval Quarry.....	12
4.1.1	Construction.....	12
4.1.2	Operations	13
4.1.3	Monitoring	15
4.1.4	Rehabilitation.....	17
5.0	SCOPE AND CHARACTERIZATION OF SOCIAL ENVIRONMENT	17
5.1	Characterization of the Social Environment.....	17
5.2	Local Community Study Area.....	17
5.2.1	Local Recreational Features and Institutions.....	17
5.2.2	Local Businesses.....	18
5.3	Broader Study Area	18
5.4	Data Gaps	20
5.4.1	Property Values.....	20
5.4.2	Local Resident and Business Dependency on Wells	22
5.4.3	Vibration	22
6.0	LIKELY EFFECTS OF THE PROPOSED QUARRY.....	23

6.1	Visual and Acoustic Berm.....	23
6.2	Noise Effects	23
6.3	Air Quality Effects	24
6.4	Effects on Water Supplies	25
6.5	Transportation Effects	28
7.0	ASSESSMENT AND EVALUATION OF SOCIAL EFFECTS.....	30
7.1	Residents' Concerns Related to Quarry Activities and Trucking.....	30
7.2	Assessment of Social Effects	31
7.2.1	Visual Effects	31
7.2.2	Noise and Vibration	32
7.2.3	Air Quality	33
7.2.4	Hydrogeology	34
7.2.5	Transportation	36
7.3	Additional Predicted Effects.....	37
7.3.1	Property Value Changes.....	37
7.3.2	Vibration	38
7.3.3	Socio-Economic Benefits Locally and Across Ontario	38
8.0	RESIDUAL SOCIAL IMPACTS	39
8.1	Visual Effect.....	39
8.2	Sense of Place	39
8.3	Loss of Water	40
8.4	Disruption Effects.....	40
9.0	CONCLUSIONS.....	40
10.0	BIBLIOGRAPHY	42

List of Maps, Figures and Tables

Map 1: High Potential Mineral Aggregate Resource Areas, Schedule C, 2008	11
Map 2: Haul Route	16
Map 3: Site Vicinity Study Areas	19
Map 4: Heritage Height Preliminary Concept	21
Map 5: Groundwater Drawdown	26
Figure 1: Process Diagram	14
Table 1: Trip Generation Estimates	29

Social Impact Review of the Proposed Brampton Brick Limited Norval Quarry

1.0 INTRODUCTION

This is Hardy Stevenson and Associates Limited's ("HSAL") social impact assessment review ("SIA") of the proposed Brampton Brick Limited Norval Quarry. The purpose of Brampton's SIA is to bring together the views of the community and other interest groups, and their responses to the proposed aggregate operation, its predicted impacts, and anticipated mitigation measures. The SIA acknowledges the planned urban development in north west Brampton and the associated changes expected in the area. This SIA is being submitted five years after Brampton Brick Limited submitted the rezoning planning application to the City of Brampton in 2008.

The timing is significant because a social impact assessment is dependent, to a certain extent, on consensus among technical disciplines on the type of physical changes that will occur for people, businesses and institutions making up the relevant social-economic environment. Over this time there have been three rounds of analysis by the proponent and two rounds of peer review comments.

HSAL has also been able to observe changes that may affect the local community over this time period. For example, the advancement of the proposed widening of Winston Churchill Boulevard. The planning for land uses in North West Brampton has also proceeded, and as a result, the potential cumulative social effects of new housing, new transportation corridors and other forms of urban development are better understood.

Other than data available through site visits, discussions with residents and data received from the North West Brampton Landowner Group, HSAL did not complete original research. Thus, the weakness of completing the analysis at a later date is that the original social environmental data contained in the 2011 DPRA study "*Socio-economic Analysis of the Proposed Norval Quarry*," has not been updated. To address this, the report assesses data that may still be acceptable and applicable to the social analysis¹.

2.0 METHODOLOGY

The social impact assessment methodology involves the collection of data on the proposed Norval Quarry and the social environment relevant to the proposed quarry. The data is assessed through a standard method of assessing impacts. Based on the residual social effects identified, conclusions are drawn on whether the proposed quarry will create social impacts and in turn, whether the impacts are acceptable or can be successfully mitigated.

¹ Please note, the opinions expressed in this report may be supplemented, reconsidered or otherwise revised by the author due to new or previously unknown information.

2.1 Approach to Assessing Social Impacts

Assessments of social impacts examine the characteristics of the undertaking ('proposed quarry') and the potential for direct or indirect effects on the community, in terms of how people live, work and recreate. The SIA analysis considers avoidance, minimization, mitigation, monitoring and compensation measures that can be implemented by the proponent and/or the community, maximizing desirable and minimizing undesirable social effects before assessing net social impacts. After these measures are considered, assessments of social impacts typically draw conclusions about the acceptability of the quarry.

SIA's are informed by public consultation comments. These comments are particularly helpful in identifying local social, economic and cultural conditions that characterize the social environment. However, SIA's are not the summation of public concerns. They involve the application of social sciences and data from other technical disciplines.

SIA's can also consider the larger social effects of shale quarry development: such as the social costs and benefits of aggregate supplies in meeting society's need for roads, places of employment, building homes and institutions. Here, assessments of social impacts provide non-commercial data on matters such as how changes in the availability of aggregate affects jobs, services and the quality of life for the larger society within and beyond Brampton. This study did not examine these broader social effects due to the proposed shale quarry development.

2.2 Standard Methodology

The word 'assessment' refers to a methodology to be used to assess social impacts. The assessment of social impacts examines the effects² of an undertaking, such as the construction and operation of a shale quarry on the social environment and determines whether the undertaking will have positive or negative effects on the quality of life of local residents and communities. Assessments of social impacts follow a standard methodology³ involving: 1) *scoping* the social environment to be studied, 2) *profiling* existing social conditions, 3) *projecting* changes that are likely to occur due to the undertaking, 4) *assessing* the effects for relative importance, 5) *evaluating* overall social impacts and 6) drawing conclusions and *recommending* how to proceed with the proposed undertaking.

1) **Scoping** determines the parameters of the assessment. For the proposed Brampton Brick Quarry understanding local community/social values is important to the assessment as is the balancing of other

² Impacts are effects that have been evaluated as being significant (either positive or negative). They may be caused by desirable or undesirable external effects to people from projects, plans, programs and policies. The extent to which social effects are significant can be influenced through avoidance, mitigation, or monitoring and compensation measures.

³ As noted in the Steetley – South Quarry Landfill Site Decision and Reasons for Decision, The Joint Board, Consolidated Hearings Act, CH-91-08.

goals such as providing shale for bricks used in the construction of housing. In addition to assessing the social effects to people in the vicinity of the proposed Brampton Brick Norval Quarry, an assessment of the social impacts of the haul route is also performed.

2) **Profiling** refers to the need to develop a profile of existing social conditions of people in the area likely to be affected and establishing baseline information which can be used to determine what difference the proposed undertaking will make to the well-being of those affected. At a minimum, this involves primary data collection through meetings with local residents and other people relevant to the proposed application, making observations and drawing conclusions about their characteristics. In addition to reviewing documents and reports, as well as meeting with local residents, 'profiling' also considered the North West Brampton development and the improvements to Winston Churchill Boulevard. Techniques typically include surveys of residents, interviews and structured observations.

3) **Projecting** refers to the need to identify the kinds of social changes that are likely to occur should the proposed undertaking proceed, who will be affected, in what way and for how long.

4) **Assessing** refers to the predicted social impacts to determine their relative importance, taking into account such criteria as magnitude and duration of potential effects, current conditions, future conditions, community goals and impact mitigation measures.

5) **Evaluating** refers to the overall social impact of the proposed undertaking on the basis of the above information. Impact minimization, avoidance and mitigation measures are applied in order to understand the net effects. The proponent is expected to evaluate whether the proposal would have any unacceptable impacts, presently and in the future.

6) **Recommending** whether and/or how to proceed with the proposed undertaking, taking into account the potential effectiveness and public acceptability of possible impact management measures.

Many quarry applications⁴ in Ontario have completed an assessment of social impacts using this standard methodology.

2.3 Evaluation Criteria

SIA studies use criteria to focus data gathering and to frame the measurement and evaluation of social impacts. The criteria are often informed by comments received through public consultation on what is important to the quality of life of residents and what is important to the management of local businesses and institutions. HSAL reviewed the criteria used in the DPRA study and found that with two exceptions they are appropriate to inform the SIA analysis. HSAL has added '*effects on the wider community*' and added '*institutions*' to '*disruptions to business/home businesses*'.

⁴ Such studies have provided useful information supporting the evaluation of aggregate applications, including quarries e.g. Walker Brothers, Niagara (O.M.B File O910030); Graham Brothers, Brampton; Lafarge, Camden East, (LaFarge, 1997 O.M.B. File PL 912122); Five W Farms, Bexley Township (O.M.B. File PL 970862); Rockfort (O.M.B. Files, PL000643, PL060448).

The following criteria were used for the proposed Norval Quarry:

- Displacement of residents/households
- Disruption of residents/households
- Disruption of community and recreational features
- Disruption of businesses/home businesses/institutions
- Changes to community character/image
- Changes to community cohesion
- Changes to economic structure
- Effects on the wider community

2.4 Tasks Completed

To gather data and complete the social analysis the following tasks were completed:

- reviewed the “*Socio-economic Analysis of the Proposed Norval Quarry*,” submitted to Brampton Brick Limited, May 2011, by DPRA;
- examined the 2008 and 2010 Brampton Brick Limited Technical Reports, Rezoning and ARA Application and Addendum materials in 2012;
- reviewed the 2010 and 2013 City of Brampton Peer Reviews of those reports;
- examined the peer review reports commissioned by the North West Brampton Landowners Group;
- reviewed relevant local and provincial policy pertaining to social impacts;
- reviewed staff reports completed by the City of Brampton, Peel Region, Halton Region, Town of Halton Hills, and the Credit Valley Conservation Authority;
- examined quarry operations at Brampton Brick Cheltenham Quarry;
- reviewed material produced by a local residents group known as Pit Stop;
- met with Pit Stop and local residents at open houses;
- met with members of the North West Brampton Landowners Group;
- attended two Public Open Houses held by the City of Brampton on October 2010 and April 2013; and,
- completed a windshield analysis of the local study area.

The Bibliography contains a list of the reports reviewed.

3.0 SCOPE OF SIA ASSESSMENT

This SIA highlights the social effects that will be experienced by communities located near the proposed quarry and along the haul route due to its construction, operation and rehabilitation and draws conclusions as to the significance of the resulting social impacts.

3.1 Study Area

How study areas are selected is important to an SIA as the study area boundaries determine who and what is considered as part of the SIA. HSAL reviewed the study area used by DPRA and concluded that the study area is appropriate. DPRA selected three broad study areas: 1) areas within the proximity of the proposed quarry; 2) areas within the vicinity of the haul route; 3) the broader community. The area in the vicinity of the proposed quarry is divided into three sub-areas:

1. On-site
2. 0 m to 500 m
3. 500 m to 1000 m

The proposed haul route is divided into two study areas with a focus on the social characteristics located on the side of roadways:

1. Winston Churchill Boulevard from the proposed Brampton Brick Quarry site north to Mayfield Road; and,
2. Mayfield Road east to Hurontario Street, south to the Brampton Brick Plant.

While HSAL agrees with the DPRA definition of the haul route study area, we would have added a 100 m and 200 m sub-study area to each side of the centre line of the haul route. Noise, vibration, odour and dust dissipates with distance, but tends to be experienced by residents and businesses within 100 m of the roadway centre line. HSAL normally adds 100 m (100 m to 200 m from the roadway centre line) as a conservative measure to insure all social features that may potentially be affected are identified. While sub-study areas have not been included to each side of the centre line of the haul route, we can support DPRA's approach.

Examples of features potentially impacted are: soft fruit and flowers impacted by dust, day cares and schools impacted by noise, dust and traffic disruption, rooms in homes potentially used for sleeping, swimming pools affected by dust, or business impacted by noise.

3.2 Relevant Policy

This section examines relevant Provincial, Regional and Municipal policies in relation to the assessment of the social impacts of the proposed shale quarry.

3.2.1 Aggregate Resources Act

The Aggregate Resources Act (R.S.O. 1990) describes what matters need to be considered before issuing a license for aggregate resource operations, as well as the potential actions to be taken in the event of non-compliance.

Section 3(1) (h) establishes that in the administration of the Act, the minister may, *“initiate studies on environmental and socio-economic matters related to pits and quarries.”*

Sections 12 (1) states that in considering whether to issue a license, the Minister or Board shall have regard to *“(b) the effect of the operation of the pit or quarry on nearby communities.”*

Section 23 (3) states that an application shall not be considered unless *“(c) adequate provision can be made as conditions of the permit to ensure a method of operation and rehabilitation so as to cause only a temporary inconvenience to the public.”*

3.2.2 Provincial Standards Policy

The Provincial Standards Policy, pertaining to the Aggregate Resources Policy Manual, further describes the roles and responsibilities of government in relation to aggregate extraction applications as set out in the *Aggregate Resources Act*. Sections that are relevant to social impact assessment :

AR 2.00.03 *‘License Conditions/Site Plan Notes’* requires the consideration of matters that have direct socio-economic impacts. The areas of concern include noise, dust, traffic, aesthetics, and drilling/blasting.

AR 2.01.10 *‘Matters to be Considered in Issuing/Refusing a License’*, Sub-section (b) *‘Effect of the Operation on Nearby Communities’* focuses on mitigating noise, dust, vibration, truck traffic, and surface water and ground water impacts.

AR 4.00.02 *‘Aggregate Permit Conditions/Site Plan Notes’* deals with socio-economic impacts related haulage and transportation issues on site and along designated routes.

3.2.3 Provincial Policy Statements

All Provincial Policy Statements are relevant to the assessment of social impacts as the Statements in their entirety provide for balancing Provincial objectives. According to the Ontario Provincial Policy Statement of 2005, a central priority is to ensure that, *“As much of the mineral aggregate resources as is realistically possible shall be made available as close to markets as possible.”* (Section 2.5.2.1)

In regards to potential social impacts, Section 2.5.2.2 states that, *“...all extraction and processing and associated activities be located, designed and operated as to minimize environmental, community and social impacts.”*

3.2.4 Peel Region Official Plan

The proposed Norval Quarry site is designated as a High Priority Mineral Aggregate Resource in the Region of Peel Official Plan (see Map 1: High Potential Mineral Aggregate Resource Areas, Schedule C, 2008). With respect to social impacts, the Peel Region Official Plan (Office Consolidation November 2008), Section 3.3 deals specifically with the treatment of Mineral Aggregate Resources in Peel Region. This section provides policy that acknowledges and seeks to mitigate the impacts that aggregate extraction operations can have on area residents. The proposed site of the Norval Quarry is designated in Schedule C of the Peel Region Official Plan as a *High Potential Resource Area*, meaning that no Regional Official Plan amendment is required.

Subsection 3.3.1.3 states the need to achieve “*balance between the demand for, and economic benefits of resource extraction activity and the protection of Peel’s communities, natural environment, cultural heritage and other resources*”. Subsection 3.3.2.7 requires that “*all extraction and processing and associated activities be located, designed and operated so as to minimize environmental, community and social impacts*”. ‘Community’ is defined as “*a group of people with a common characteristic or interest living together within a larger society.*”

Subsection 3.3.2.8 establishes the need to conduct studies to address the cumulative effects of resource extraction on the local community, the environment and cultural features.

3.2.5 City of Brampton Official Plan




The proposed Norval Quarry site is also designated as a Shale Resource in the City of Brampton Official Plan. Section 4.14.4 in part states, the purpose of the North West Brampton Policy Area (NWBPA) is to provide for the protection and potential use of shale under the following policy structure, while recognizing that the long term use of these lands will be for urban purposes. Under Section 4.14.4.1 the extraction of shale can occur without an Official Plan Amendment but the property must be properly zoned and a License under the Aggregate Act must be issued.

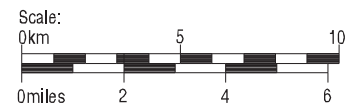
This Schedule forms part of the Regional Municipality of Peel Official Plan and should be read in conjunction with the Plan's written text and with the area municipal official plans.

Information outside of Peel Region is shown on this Schedule for illustrative purposes to display inter-regional linkages.

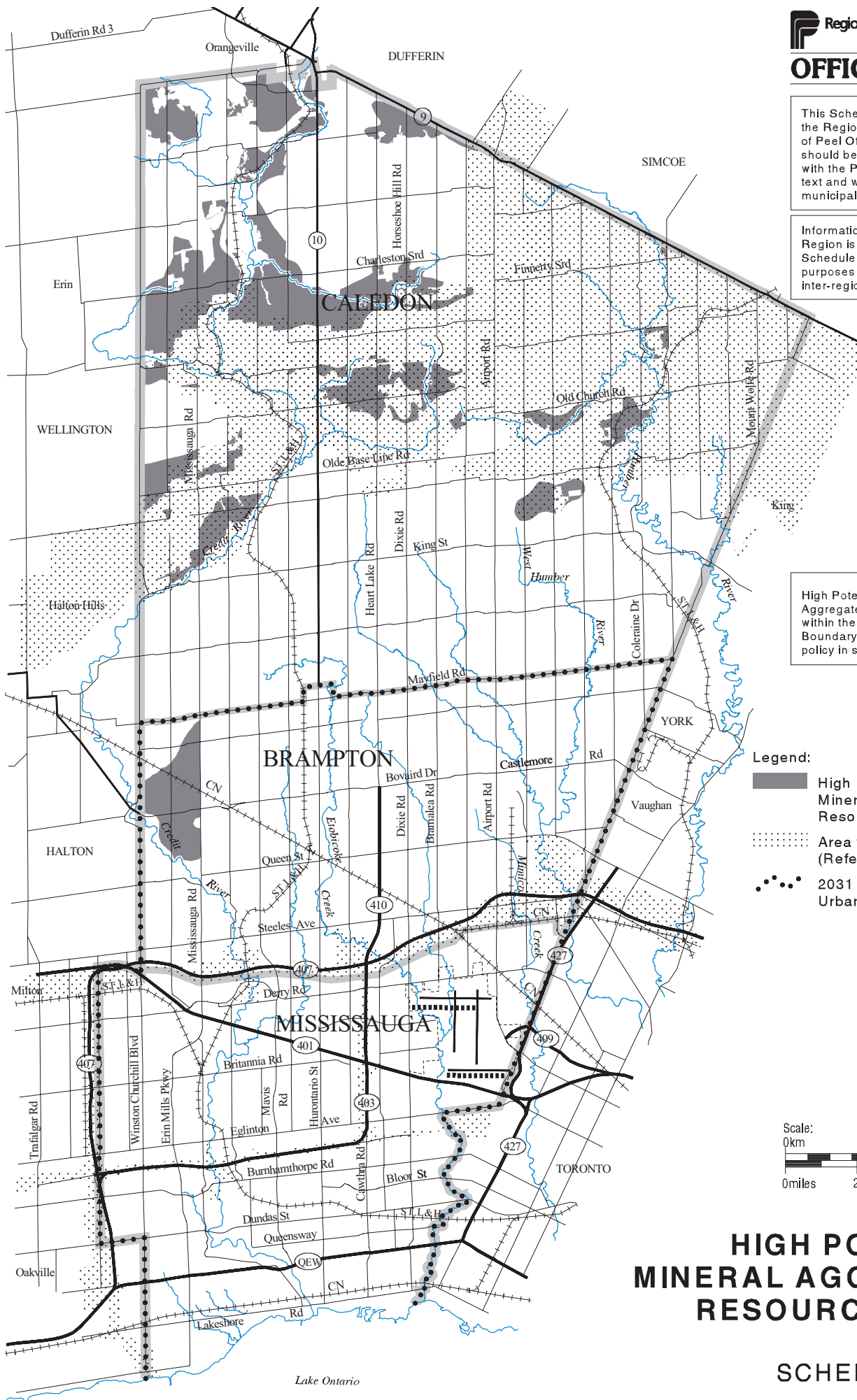
High Potential Mineral Aggregate Resource Area within the 2031 Urban Boundary is subject to policy in section 5.3.4.2.2f.

Legend:

-  High Potential Mineral Aggregate Resource Area
-  Area with Special Policies (Refer to Figure 2)
-  2031 Regional Urban Boundary



HIGH POTENTIAL MINERAL AGGREGATE RESOURCE AREAS



Section 4.14.4.1 states that, *“Notwithstanding Section 4.14.2 of this Plan, within the NWBPA, extraction of shale shall be permitted to occur without an amendment to this Plan, subject to the property being zoned for mineral extraction in the City’s zoning by-law and the issuance of a Licence under the Aggregate Resources Act.”*

Section 4.14.4.2 establishes that, *“In conjunction with the Provincial and Regional regulations, the City shall regulate a shale extraction operation and accessory uses to ensure that environmental and community impacts are minimized.”*

Section 4.14.4.6 addresses potential social effects for future residents. It states: *“A warning clause shall be required as a condition of development approval, for all residential plans of subdivision located within 500 meters of the NWBPA, as identified in Schedule “F” of the Brampton Official Plan. The warning clause shall address the potential for impacts on the use and enjoyment of the subject property due to the possible interim use of lands in the NWBPA for shale extraction. Any development proposed in such areas shall be appropriately planned and designed to recognize the potential of a shale extraction operation within the NWBPA.”*

4.0 NORVAL QUARRY PROPOSAL

4.1 Characterization of the Proposed Norval Quarry

The Site Plan Report⁵ states that Brampton Brick Limited has applied for a License to construct and operate a Category 2, Class A Quarry, Below Water. The proposed quarry is situated on a 34.9 ha (86 acre) area of shale within an area designated as Protected Countryside (Natural Heritage System) in the Greenbelt Plan of 2005. An application for rezoning was submitted to the City of Brampton in 2008.

Quoting from the Site Plan Report⁷, *“Brampton Brick Limited plans to remove 2.3 million cubic meters of shale and transport it to its plant on Highway 10. The shale will be used for blending with its Cheltenham shale in the Wanless Drive brick plant. The shale will be stockpiled at the Norval Quarry and transported for an estimated 200 days per year. This represents a production rate of 1,000 tonnes per day⁶.”*

4.1.1 Construction

Brampton Brick Limited states⁷, *“shale will be excavated in two stages to manage groundwater flow and water management. The entrance and stockpile area are designed for landscape screening and noise control. Shale will be excavated in two stages: overburden, including topsoil will be stripped from the excavation area will be incorporated into vegetated screening berms. All of the screening and noise*

⁵ Norval Quarry Site Plan Report, Long Environmental, Brampton Brick Limited, August 2010.

⁶ Norval Quarry Site Plan Report, Long Environmental, Brampton Brick Limited, August 2010, p. 52. The accompanying text in this section is largely verbatim from the Site Plan Report.

⁷ Norval Quarry Site Plan Report, Long Environmental, Brampton Brick Limited, August 2010, p. 48. The accompanying text in this section is largely verbatim from the Site Plan Report.

control berms will be constructed from the soil materials stripped from Stage 1. The maximum disturbed area will be up to 20 ha.”

4.1.2 Operations

Brampton Brick Limited states that the quarry operations will involve two processes: 1) excavation and stockpiling and 2) trucking. They further state that *“excavation and stockpiling will occur for up to 3 months per year, between June and October. Natural weathering, from November to May will soften the shale bedrock to facilitate excavation. Shale will be ripped on slopes and benches, with a D10 type bulldozer equipped with a single tooth ripping hook. The loose, weathered material will be excavated and transported to the stockpile by an earth scraper of approximately 15 m³ capacity.”* (Please see Figure 1: Process Diagram).

Brampton Brick Limited states, *“there will be no onsite processing”* and that *“all crushing, grinding and screening is performed at the brick plant.”*

Brampton Brick Limited states *“truck loading will involve a wheel loader with a 5 to 6 m³ bucket and integral weigh scale. At 35 tonne truck capacity, approximately 30 loads per day will be required. This corresponds to 3 truckloads or 6 trips per hour for a 10 hour working day.”*

The proposed quarry will operate at a production rate of 200,000 tonnes per year. Winston Churchill Boulevard will be used as the site access. Brampton Brick Limited has noted that Winston Churchill Boulevard will be upgraded and reconstructed to truck route standards. The truck route is Winston Churchill Boulevard north to Mayfield Road. Trucks will then travel on Mayfield Road east to Highway 10 and then south on Highway 10 to the Brampton Brick Plant.⁸ (Please see Map 2: Haul Route)

⁸ Norval Quarry Site Plan Report, Long Environmental, Brampton Brick Limited, August 2010, p. 23.

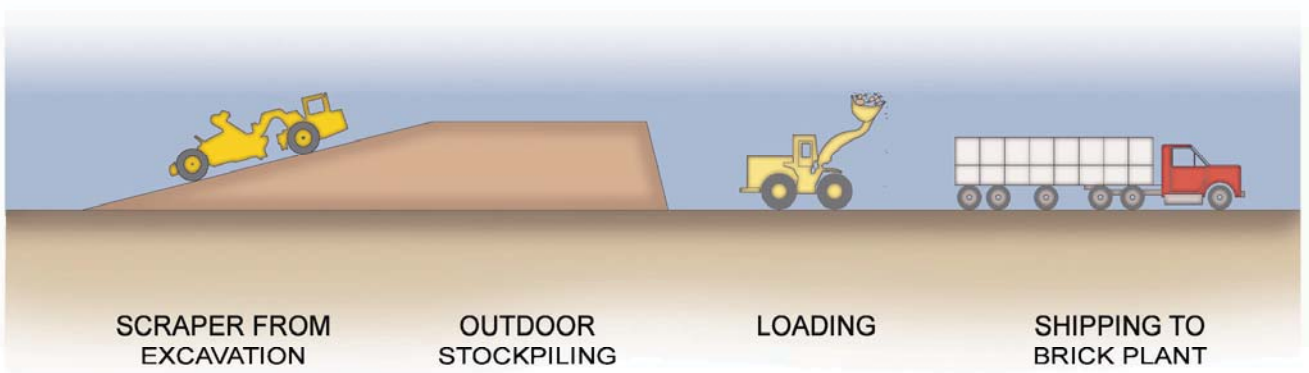
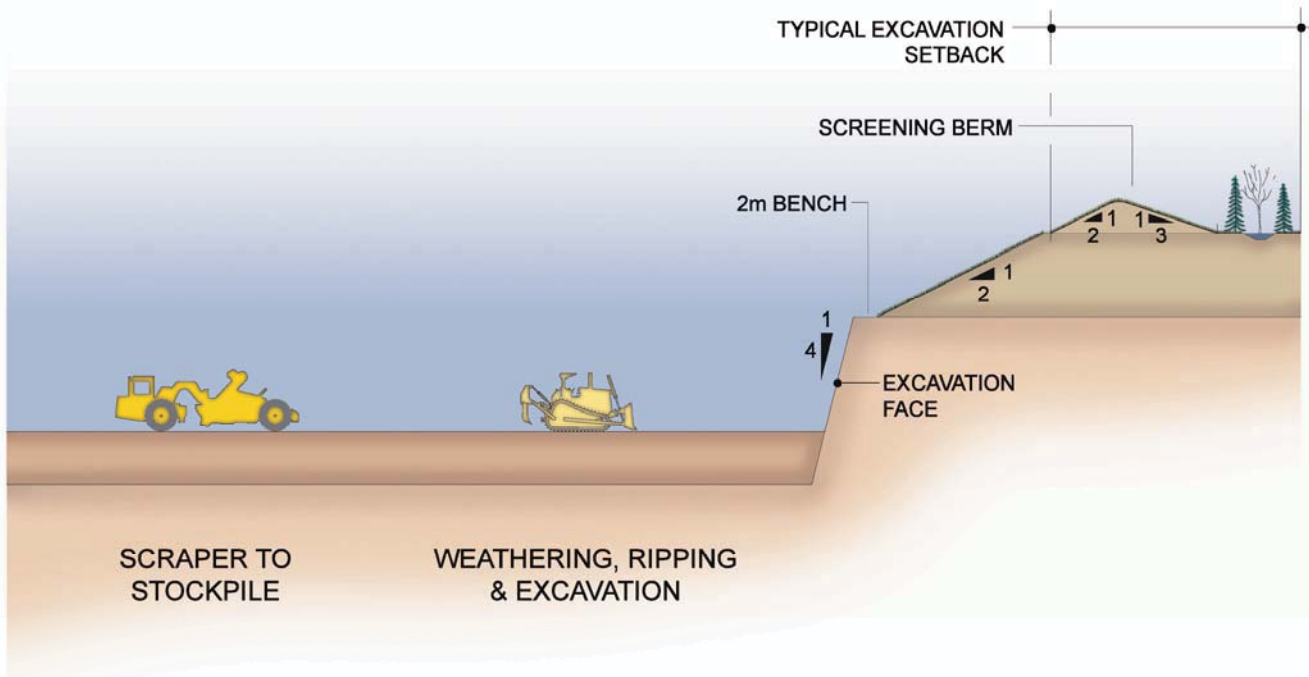


Figure 1
PROCESS DIAGRAM



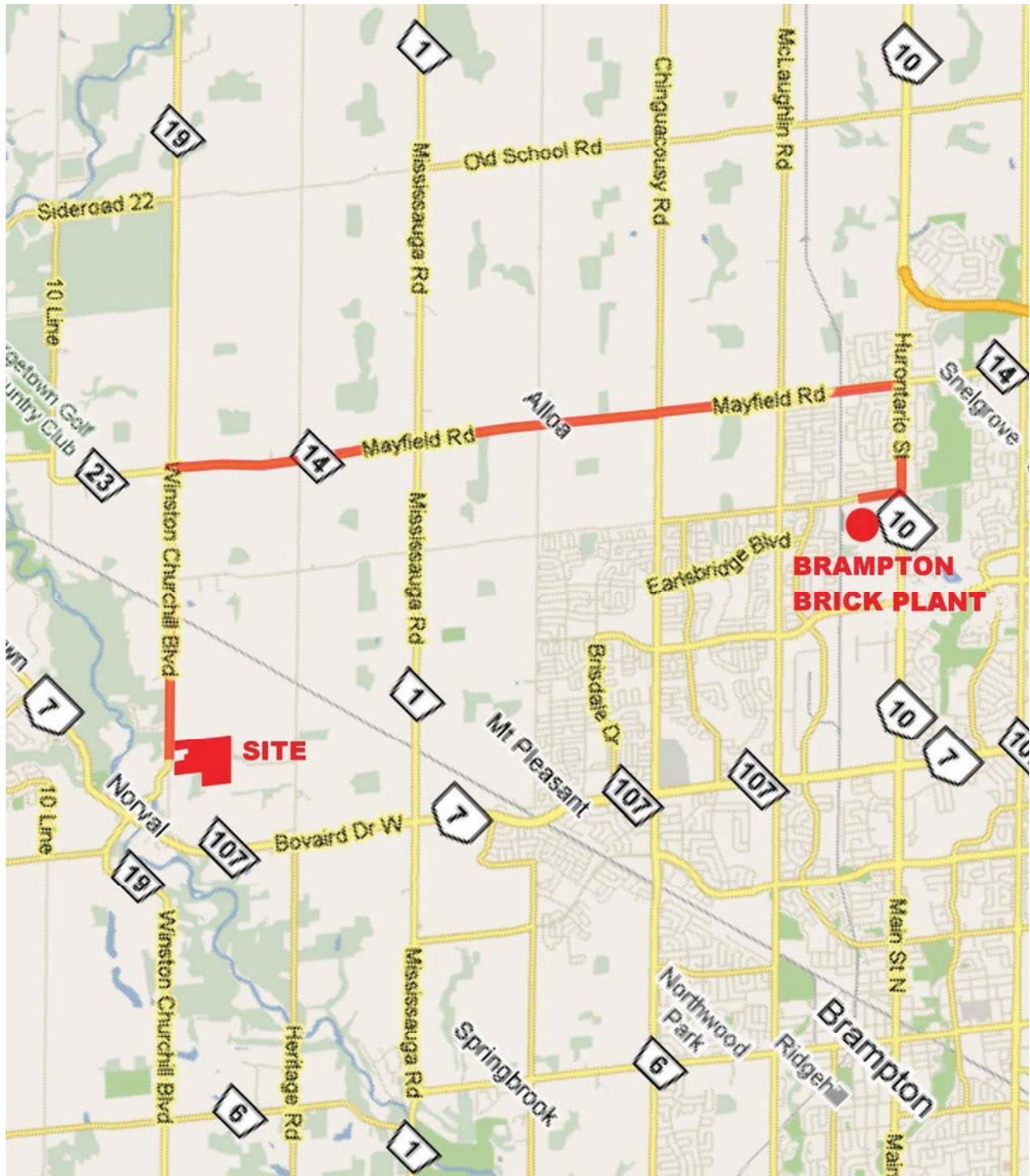
4.1.3 Monitoring

Brampton Brick Limited proposes⁹ continuous monitoring during quarry operations. They state monitoring may include:

- a. *"Dust - may include perimeter dustfall stations and records of wind speed and direction, during operations, with specific investigation and reporting in the event of concerns expressed by neighbours.*
- b. ***Surface Water** - continued monitoring of climate, flows and quality.*
- c. ***Groundwater** - onsite monitoring to record water levels and quality, at the multi-level onsite observation wells and PTTW reporting.*
- d. ***Noise** - periodic monitoring in the event that complaints arise. One annual monitoring of "typical" quarry operations could occur during the first 2 years, to confirm the validity of predesign estimates.*
- e. ***Shale Production** - data are required for annual reporting, under the Licence. Monthly Company records will be maintained to verify rates of site activity and truck traffic;*
- f. ***Settling Pond Discharge** - rates, quantities and pre-discharge water quality testing will be monitored in accordance with the C of A.*
- g. ***Vegetation Management** - should include an annual planting and inspection of landscaped areas, early in the growing season, as set out on the Vegetation Management Plan.*
- h. ***Wells** - on neighbouring properties will be continuously monitored, to the extent permitted. The Company will maintain regular dialogue with neighbours, to record changes in water levels, quality or personal experience. "*¹⁰

⁹ Norval Quarry Site Plan Report, Long Environmental, Brampton Brick Limited, August 2010, p. 64. The accompanying text in this section is largely verbatim from the Site Plan Report.

¹⁰ Norval Quarry Site Plan Report, Long Environmental, Brampton Brick Limited, August 2010, p. 64. The accompanying text in this section is largely verbatim from the Site Plan Report.



Map 2

HAUL ROUTE



4.1.4 Rehabilitation

Brampton Brick Limited has identified a progressive rehabilitation plan that follows the sequential excavation plan. The topsoil from Stage 2 will be used to rehabilitate the Stage 1 excavation. The Provincial Standards under the Aggregate Act specifies that rehabilitation must have regard to the adjacent lands. Given that the site is adjacent to Greenbelt Plan lands, rehabilitation will occur at equal or greater ecological value as the surrounding lands. Brampton Brick is proposing to rehabilitate the site with more than 42 percent forest cover. The rehabilitated area will include four zones: 1) vegetation protection zone; 2) vegetation enhancement zone; 3) ecological shoreline zone, and; 4) pond.¹¹

5.0 SCOPE AND CHARACTERIZATION OF SOCIAL ENVIRONMENT

5.1 Characterization of the Social Environment

The characterization of the social environment addresses the question, who are the people, businesses and institutions living in the vicinity of the quarry, haul route and in the wider community? Original research informing the characterization is based on DPRA original survey research supplemented by HSAL secondary research.

5.2 Local Community Study Area

Multiple methods were used by DPRA to gather data on the social environment. In general, the data gathered by DPRA is acceptable and reliable; although the sample size for primary data is small. A few areas where data is weak are discussed below. Based on the data, DPRA describes: who lives in the various study areas; their demographic characteristics; how people use their properties; what people value about their quality of life and how they view traffic.

5.2.1 Local Recreational Features and Institutions

Through interviews and other means, DPRA also gathered data on local community and recreational features and organizations within each study area. Key organizations and features where data is collected include: the Assembly Hall of Jehovah's Witnesses, McNab Pioneer Cemetery, Hillcrest Cemetery, Upper Canada College's Norval Outdoor College, Georgetown Daycare Centre, the Credit River Angler's Association, the Norval Community Association, Lucy Maud Montgomery Garden, Lucy Maud Montgomery Museum, McNab Park, Norval Park, Norval Woman's Institution, St. Paul's Pioneer Cemetery, the Norval Heritage Society, Norval Presbyterian Church, Norval United Church of Canada, the Women's Institute, the Sant Nirankari Mission, St. Elias Church, St. Paul's Church, and the Willow Park Ecology Centre. Concerns from people representing these institutions are also listed.

¹¹ Norval Quarry Site Plan Report, Long Environmental, Brampton Brick Limited, August 2010, Figure 26 Final Rehabilitation.

There is no evidence of a DPRA interview with the North-West Brampton Landowners Group or Pit Stop – although general information was gathered from their websites. HSAL supplemented this data gap by meeting with Pit Stop, local residents and representatives of the North West Brampton Landowners Group.

DPRA also presented a broad overview of the local community and region. Their summary includes information on the history of the site area and the surrounding community; the demographic trends in the local community and region, including population growth, population density, age distribution, housing tenure, family size and structure, as well as labour force and employment participation. Key contacts interviewed included John Hutton (City of Brampton Councillor) and Bryan Lewis (Town of Halton Hills Councillor). The community character of the study areas and the extent to which people living within each study area are satisfied is noted by DPRA. Community cohesion within each study area is measured and defined by how often neighbours visit and help each other out with home repairs, yard maintenance and house sitting. Overall this data is acceptable and has been used in the HSAL social impact assessment.

5.2.2 Local Businesses

DPRA listed businesses and home businesses in the area. Given the low survey response we conclude that the profile of local businesses is not comprehensive. Thus, data on local businesses was not used by HSAL. However, HSAL does not expect businesses to experience social impacts and we are of the opinion that this does not weaken the SIA. As a result, the socio-economic impact on local businesses is not examined.

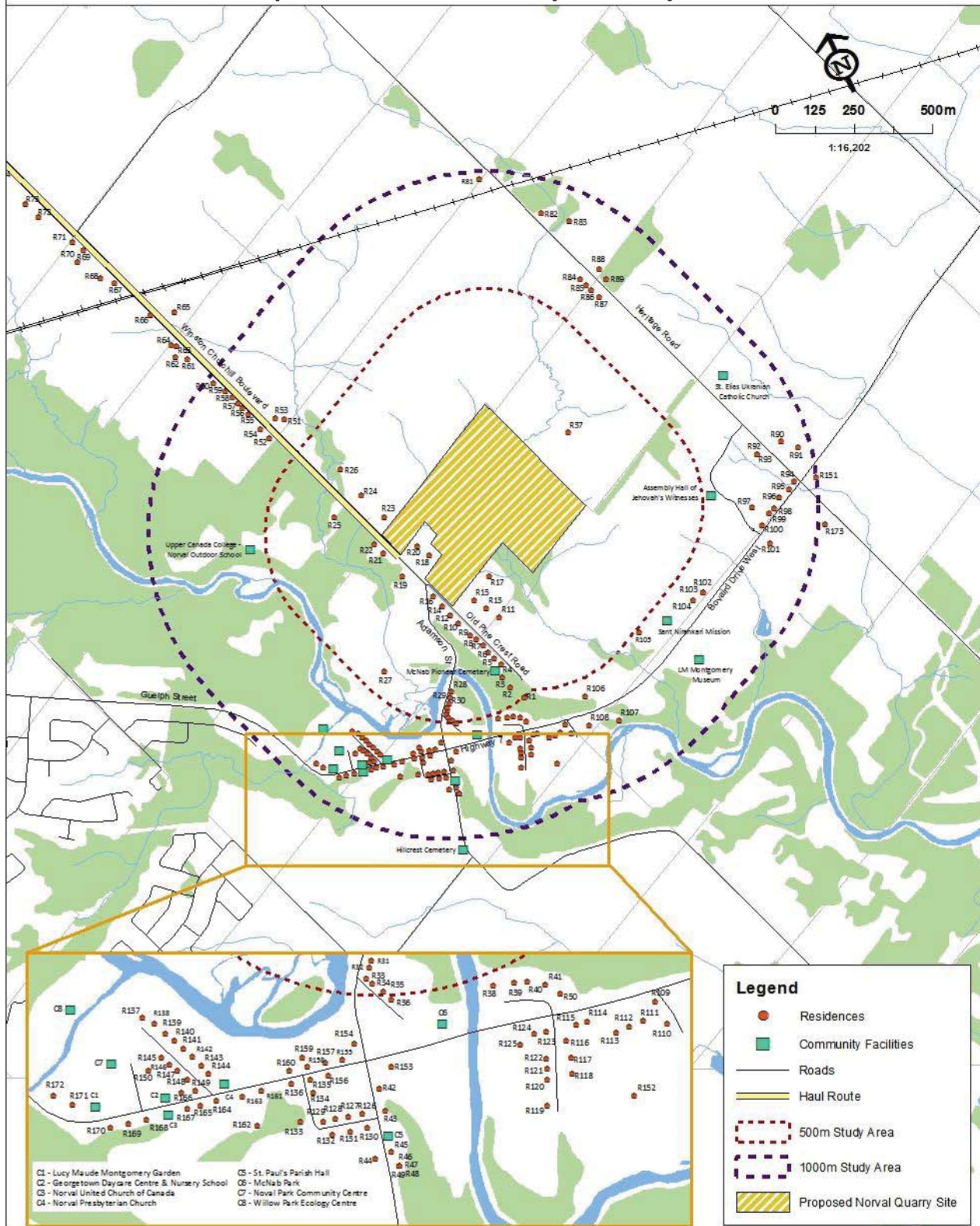
5.3 Broader Study Area

DPRA describes the study area as primarily *“agricultural and rural land uses consisting of farm complexes, rural residential properties, businesses and home businesses. The landscape of rolling hills and the Credit River Valley, with several tributaries in the area, provide a rural atmosphere. Within the Village of Norval, land uses also include commercial enterprises, community and recreational features and community services.”*¹²

They describe the history of the proposed Norval Quarry property and area and count 37 residences within 500 m of the proposed quarry and 116 residences within the 500 m to 1000 m study area (Please see Map 3: Site Vicinity Study Areas). Several residences are within the Town of Halton Hills and the rest are in the City of Brampton. With DPRA’s estimate of 489 people within 1 km of the proposed quarry, the proposed Norval Quarry represents a denser human settlement pattern than occurs in the vicinity of several other quarries throughout Ontario.

¹² “Socio-economic Analysis of the Proposed Norval Quarry,” DPRA, May 2011, p. 18.

Map 3: Site Vicinity Study Areas



Map Created by DPRA Canada, February 2011 | Source: Ontario Base Mapping - The Geography Network (<http://www.geographynetwork.ca/website/obm/viewer.htm>)

SIA practitioners typically characterize the social environment with and without the project proceeding. DPRA concludes that without the quarry, *“the area will be an isolated pocket of agriculture and open space within a dense and highly urbanized area.”* HSAL agrees with this characterization.

DPRA acknowledges the growing urban settlement area to the east of the proposed quarry. They also elaborate on future urban settlement in Section 7.0 (Future Conditions with no Development of the Norval Quarry). HSAL met with planners and representatives of the North West Brampton Landowners Group and reviewed the updated information about Heritage Heights.

The North West Brampton Landowners Group raised the concern about the effect of the quarry on future residents. Given that the City of Brampton is presently engaged in the secondary planning for North West Brampton it would have been prudent for DPRA to consider the type and extent of growth and development planned and likely to be in place over the life of the proposed quarry, as well as any potential social impacts.

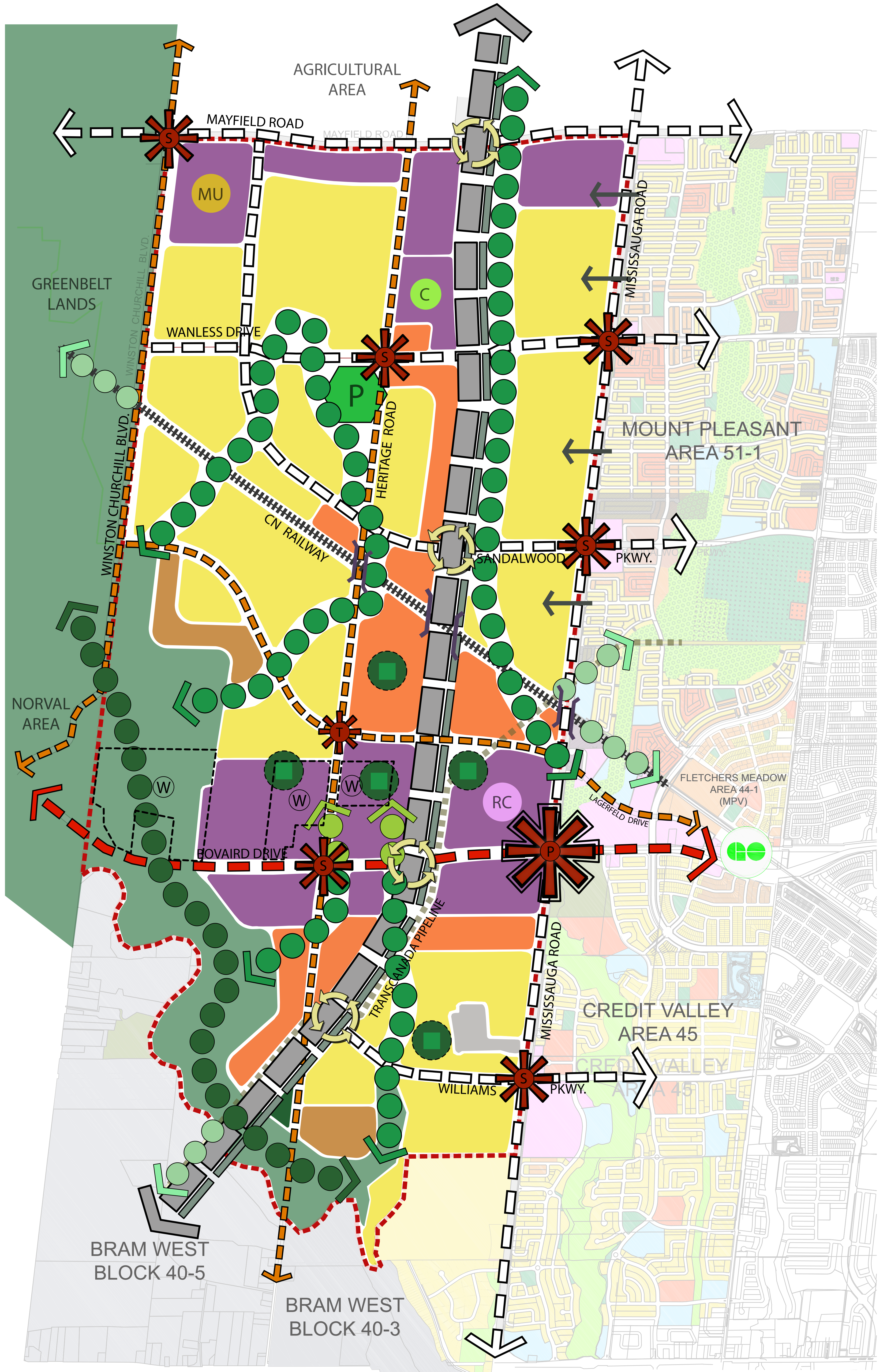
Information gathered by HSAL indicates that a major transportation link and commercial development is also planned over the time period the quarry will be operating (Please see Map 3: Heritage Heights Preliminary Concept NAK, City of Brampton, November 2012). Thus, both current and future residents may be living beside the quarry and a potential 400 series highway link, as well as new housing construction and commercial and retail developments. However, HSAL recognizes that this development concept may change when finalized.

Greenway corridors also traverse this community. Given the Heritage Heights urban development in North West Brampton, the future north-south transportation corridor, the east-west transportation corridor, the future social environment will be highly urbanized for these residents. Highways, retail development and new housing result in both positive and negative social impacts. As a result, changes will occur in the life of this community whether or not the quarry proceeds.

5.4 Data Gaps

5.4.1 Property Values

Although Property Value Protection is recommended by DPRA as a proposed mitigation measure in Section 11.3, neither DPRA or other consultants have collected baseline information on property values. Because this data was not collected, HSAL is not able to assess social effects and draw conclusions about property value effects.



NOTE: PLAN IS PRELIMINARY AND IS NOT TO BE USED TO DEFINE THE ULTIMATE LOCATION OF TRANSPORTATION AND SERVING INFRASTRUCTURE, LAND USES OR THE LIMITS TO THE NATURAL HERITAGE SYSTEM. A DETAILED SUBWATERSHED STUDY WILL ASSIST IN DEFINING THE NATURAL HERITAGE SYSTEM AND POTENTIAL LINKAGES.

LEGEND

- | | | | | | | | |
|--|---|--|---|--|--|--|-----------------------------|
| | GREENWAY LINKAGE OPPORTUNITY | | POTENTIAL 400-SERIES HIGHWAY WITH HYDRO CORRIDOR (Final corridor alignment subject to current and ongoing EA process) | | RESIDENTIAL NEIGHBOURHOODS (PREDOMINANTLY LOW DENSITY) | | GATEWAY/NODES - PRIMARY |
| | REGIONAL CORRIDOR / GREENWAY | | ARTERIAL ROADS | | COMPACT URBAN RESIDENTIAL | | GATEWAY/NODES - SECONDARY |
| | POTENTIAL GREENWAY EXTENSION | | DEDICATED TRANSIT WAY (BOVAIRD DR.) | | EXECUTIVE RESIDENTIAL | | GATEWAY/NODES - TERTIARY |
| | TCPL / CN RAIL GREENWAY LINKAGE OPPORTUNITY | | CHARACTER ROADS (WINSTON CHURCHILL BLVD. / HERITAGE RD. / LAGERFELD DR.) | | BUSINESS EMPLOYMENT / INSTITUTIONAL / COMMERCIAL / MIXED-USE | | PARKWAY INTERCHANGE |
| | EXISTING NATURAL FEATURE | | COLLECTOR ROAD EXTENSION | | MIXED-USE | | RESERVOIR & PUMPING STATION |
| | DESIGNATED GREENBELT AREA | | CN RAILWAY LINE | | PROPOSED REGIONAL CENTRE | | EXISTING PLACE OF WORSHIP |
| | COMMUNITY PARK | | GRADE SEPARATED CROSSINGS | | POTENTIAL CEMETERY | | |
| | | | TRANSCANADA PIPELINE | | | | |
| | | | STUDY AREA BOUNDARY | | | | |

5.4.2 Local Resident and Business Dependency on Wells

Section 11.3 of the DPRA report recommends an Adaptive Management Program to address surface and groundwater as it pertains to social effects on residents and businesses. We note that the proponents' consultant, Golder Associates collected data on local wells. They state:

"At its maximum extent and without mitigation, excavation of the quarry and resurfacing of portions of the site associated with the construction of berms (to mitigate against visual and acoustic impacts), an aggregate stockpile area (on the western portion of the site) and an associated haulage road are expected to reduce the groundwater table in the vicinity of the Site and intercept a proportion of the groundwater flows that would normally enter the main tributary. By inference, the changes in the local groundwater regime are expected to potentially affect the viability of several (up to 10) nearby domestic wells..."¹³

This conclusion is confirmed by 2011 City of Brampton technical reports (Genivar, 2011) and has not changed in 2012 Peer Review Response to Brampton Brick's Addendum. Given the potential impact to water supplies for local residents, businesses and institutions, we would have expected Brampton Brick Limited to have gathered information on the dependency of local residents, businesses and institutions on their wells. For example, what would change for local residents and institutions if the quality and quantity of surface water and well water was temporarily not available or diminished?

The proponent is depending on new Peel Region and/or Halton Region water mains providing water to local residents, businesses and institutions. Yet the timing of municipal water supplies is uncertain. Because of the potential to impact local wells, considerable weight is placed on the Adaptive Management Plan ("AMP") being effective in reducing the social impacts that would be experienced. The proponent has not gathered information on how dependent local residents and businesses are on continuous water supplies nor are they aware of how severe the effect of water interruption will be. In spite of this, the proponent is counting on the AMP to be effective in fixing the problem after it has occurred and reversing the social effects. It is important to note that at this juncture, the AMP is voluntary and not an enforceable document.

5.4.3 Vibration

Given the movement of equipment on site and the use of scrapers to remove the shale we would have expected the consideration of 'vibration' in the technical reports.

¹³ "Socio-economic Analysis of the Proposed Norval Quarry," DPRA, May 2011, p. 86.

6.0 LIKELY EFFECTS OF THE PROPOSED QUARRY

6.1 Visual and Acoustic Berm

Because of noise, dust and visual effects Brampton Brick Limited has proposed the use of a berm to block views of the area of excavation, storage areas and areas of on-site transportation (See Figure 1: Process Diagram and Map 5: Groundwater Drawdown). To address overall visual effects of quarry operations a *'Visual Assessment and Vegetation Management Plan'* was prepared for Brampton Brick Limited by Todhunter Associates (May 2012). Todhunter concludes that the visual and acoustic berm will be effective in minimizing or avoiding visual and noise effects that in turn have the potential for social effects.

Dillon Consulting (November 2012) completed a peer review and raised the following issues: 1) the berm does not address the views of people who would be living to the north of the site (future urban lands); 2) the vegetative screening may not be effective and this is significant as the berms themselves will create a significant visual impact; 3) because the vegetative screening will take time to develop, local residents will lose their scenic views; 4) even with the screening, the existing views will be lost for many years; 5) trucks exiting the site will have their headlights shine into the windows of neighbouring residents. In terms of headlights, Dillon specifically points to effects during winter mornings and evenings on two properties: 10368 and 10364 Winston Churchill Boulevard Dillon states that no mitigation measures are recommended by Brampton Brick Limited for these properties. Based on the forgoing, HSAL believes that there will be both visual social effects due to the berm and loss of views as well as the potential for people to experience social effects due to light pollution. These effects are considered in more detail in Section 7.2.1.

6.2 Noise Effects

There is general agreement among the technical disciplines that noise can be appropriately mitigated. Brampton Brick Limited retained Aercoustics Engineering Limited to complete the noise analysis. HGC Engineering was retained by the City of Brampton to complete a peer review. Aercoustics assessed sound levels and berm heights for a typical person standing in a yard near the house. In September 2011, Aercoustics completed an addendum to their noise impact study to address the addition of a second scraper to the quarry operations. The additional noise required an increase in the height of the northwest berm to EL244m (2 m increase), the southeast berm to EL251m (2-3 m increase) and an increase in the Western berm by 1.5 m. In response, HGC notes, *"...sound levels may be exceed the criteria on occasion and no mechanism has been provide to ensure that the sound level limits are met on an ongoing basis."*¹⁴ The HGC agrees with Aercoustics that sound levels are typically 1 to 2 dB higher at elevated locations such as upstairs windows or decks. HSAL believes that there will be minor noise

¹⁴ Second Peer Review of Noise Impact Assessment, Proposed Norval Quarry, Brampton Brick Limited (DRAFT), HGC Engineering, November 8, 2012 p. 1.

disruption during periods of construction and rehabilitation for some local resident on the east side of Winston Churchill and Old Pinecrest Road. These effects are considered in more detail in Section 7.2.2.

6.3 Air Quality Effects

Jacques Whitford Limited (now Stantec Consulting Limited) completed the Air Quality Assessment report and a follow-up memorandum for Brampton Brick Limited. The report and memorandum was reviewed by RWDI Consulting Engineers and Scientists. Air quality reports, in general address dust effects that in turn can result in social impacts. Local residents are involved in dust-sensitive activities including gardening, growing nursery stock and soft fruit. Should dust escape from the site and potentially exceeding MOE Standards, local residents on the east side of Winston Churchill Boulevard and Old Pine Crest Road will experience greater effects.

Jacques Whitford Limited report predicts that on-site truck traffic, stockpile building and truck loading are the most significant contributors to dust. To comply with MOE regulations, Brampton Brick reports that screening; vegetative plantings and berms will be used to reduce dust levels. Jacques Whitford states:

“The maximum predicted daily average PM concentration occurs along the north western boundary of the site and is slightly below the MOE air quality criteria of 120 ug/m³. The main contributors to the PM emissions at this location are truck traffic along with stockpile wind erosion, stockpile building and truck loading. The maximum predicted concentration at this location is expected to be conservative as the assessment did not account for the screening effect of vegetation that will be planted on the berms or the sheltering effects that the berm will have on truck loading.”

“The study found that the maximum predicted concentrations at all “special receptors” are below their applicable criteria (ranging from 2% to 78% of the criteria) depending on the contaminant.”¹⁵ ‘Special receptors’ means people and buildings.

RWDI examined Jacques Whitford’s (Stantec) research with respect to wind storms and specific area sources of emissions coming from the pit and they were generally satisfied that, at least in the later stages of pit operation, the assumptions used by Brampton Brick are conservative. The RWDI peer review concluded that to achieve dust management, water will be required to be applied as a dust suppressant. They note that Brampton Brick has assumed that to achieve the maximum hourly watering rate, water will come from off-site (municipal water).

While dust management will be defined by a Best Management Practices Plan (“BMPP”), as of August, 2012 RWDI stated that such a plan had not been produced by Brampton Brick for the proposed Norval Quarry. Brampton Brick Limited states they have a BMPP in use for their Cheltenham Quarry that can

¹⁵ Air Quality Assessment Report, Brampton Brick Limited, Norval Quarry, Jacques Whitford Limited, November 2008.

be applied to the Norval Quarry. HSAL believes that if dust management measures are not implemented, there will be social impacts experience due to dust. These effects are considered in more detail in Section 7.2.3.

Given the general agreement by the dust management consultants, and assuming the BMPP will be produced and acceptable, HSAL is of the opinion that dust effects for local residents will not result in a significant social impact. However, without an agreement being in place, as well as the implementation of a BMPP, there dust effects will be experienced by local residents.

6.4 Effects on Water Supplies

Effects on groundwater have been examined by Brampton Brick Limited, the City of Brampton and consultants for the North West Brampton Landowners Group. For Brampton Brick Limited, Golder Associates completed the preliminary Hydrogeological Assessment of the proposed quarry in 2008, an updated report in 2010 and responses to peer reviews in 2012. Genivar is the peer reviewer for the City of Brampton and completed reports in 2011 and 2012.

Map 5¹⁶ indicates that the potential social effect centres on the hydrogeological effects of the quarry (loss of domestic water for local residents, businesses and institutions) due to excavations below the water line. Golder describes the depth of excavation that, in part, creates hydrogeological effects,

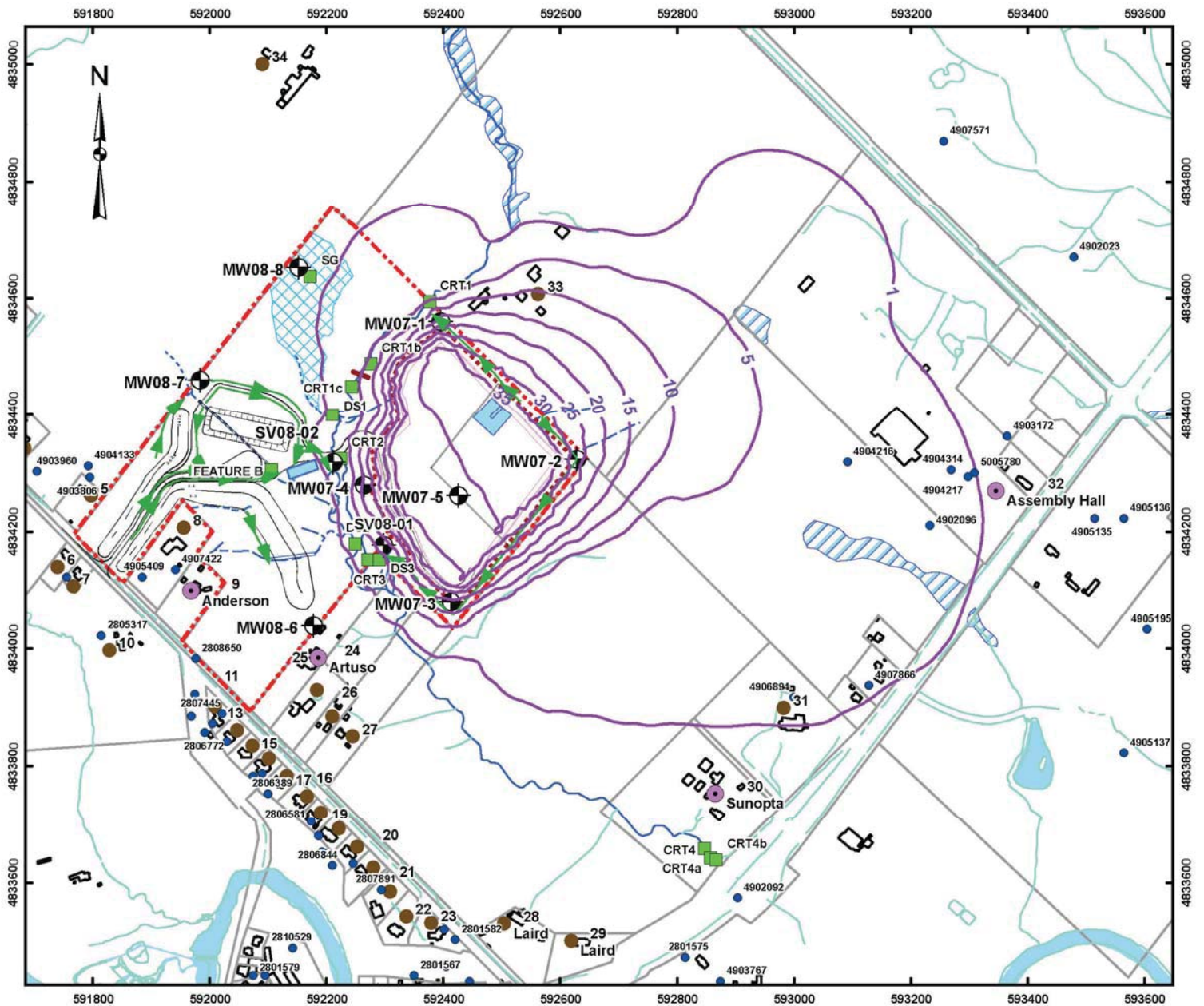
“Operational plans contemplate the quarry excavation being initiated in, and limited to, approximately 9.3 ha in the eastern portion of the Site, and extending 30 to 40 m below the existing ground surface in that area.”¹⁷

Other hydrological issues involve the effect of quarrying on local wetlands due to groundwater discharges, hydrological flows to the main tributary to the Credit River, discharges from the storage pond, effect on fisheries, seasonal fluctuations in water levels and assumptions related to the provision of municipal water supplies. Expanding municipal water from Halton will require an agreement or between Halton and Peel or an Official Plan Amendment.

Map 5 shows that the 1 m drawn down of water will affect St. Nirankari Mission, the Assembly Hall of the Jehovah’s Witness, farms, and several residential homes. There is also a risk of social effect to additional local wells for people generally living east of Winston Churchill Boulevard and Old Pinecrest Road.

¹⁶ Norval Quarry Site Plan Report, Long Environmental, Brampton Brick Limited, August 2010, Figure 12 Groundwater Drawdown, p. 27.

¹⁷ Level 1 / 2 Hydrological Technical Report and Maps and Appendices. Norval Quarry, Brampton Brick Limited, Golder Associates, July 2010, p. 1.



- Monitoring Well Nest
- MOE Water Well Record
- Private Well Location
- Private Well Sampled and Instrumented for Long Term Monitoring
- Surface Water Station
- Historic Wier Structure
- Simulated Groundwater Contour (masl)
- Drawdown Contour (m)
- Proposed Diversion Flow Direction
- Parcel
- Permanent (Perennial) Watercourse
- Intermittent Watercourse
- Ephemeral Watercourse
- Off-Site Drainage Feature
- Wetland (MNR 2009)
- Wetland (MNR 2007)
- Extraction Limit
- Norval Property Boundary

Map 5

GROUNDWATER DRAWDOWN



Golder states, “At its maximum extent and without mitigation, excavation of the quarry and resurfacing of portions of the site associated with the construction of berms (to mitigate against visual and acoustic impacts), an aggregate stockpile area (on the western portion of the site) and an associated haulage road are expected to reduce the groundwater table in the vicinity of the Site and intercept a proportion of the groundwater flows that would normally enter the main tributary. By inference, the changes in the local groundwater regime are expected to potentially affect the viability of several (up to 10) nearby domestic wells and reduce the volume of base flow that reports to the main tributary and the lower permanent (perennial) portion of Feature B. Potential effects in the functionality of the on-site wetland may also occur as a result of un-mitigated groundwater reductions.”¹⁸

We note that Golder Associates have expressed uncertainties about the ability of Brampton Brick Limited to mitigate the loss of water supplies affecting local residents. DPRA quotes Golder Associates stating:

“If and where unexpected effects resulting from the quarry are identified, corrective mitigation measures (likely in the form of flow/water level augmentation) will be undertaken, as appropriate. The proposed monitoring program, complaints process, regular reporting of monitoring results and guarantees of alternative water supplies will serve to mitigate some of the residents’ concerns related to groundwater.”¹⁹

DPRA gathered information indicating that residents are quite concerned about effects of the proposed quarry on the quality and quantity of their water supplies. HSAL research confirms this finding. Given that some of these residents and institutions are on wells and some depend on their wells for their business as well as personal use, as stated earlier, HSAL would have expected that Brampton Brick consultants would have gathered information and completed further analysis of the extent that local residents are dependent on well water vs. water supplied by the City of Brampton/Peel Region or Town of Halton Hills and Halton Region.

For example, to what extent would a loss of water affect the quality of life of local residents, functioning of local schools and institutions, growth of nursery stock, production of soft fruit or provision of water for animals? This analysis is important because it would provide information about which mitigation measures would be better suited for the social characteristics of the area. HSAL research²⁰ indicates that some institutions are quite dependent on water being available, such as the Jehovah’s Witness Assembly Hall as there are times when over 1000 people will attend conferences and services.

Brampton Brick Limited technical consultants recommend the implementation of an AMP that will involve well monitoring, surveys, complaints response and providing replacement water supplies. Their consultants also refer to the possible extension of the existing Halton Region water main through the

¹⁸ Level 1 / 2 Hydrological Technical Report and Maps and Appendices. Norval Quarry, Brampton Brick Limited, Golder Associates, July 2010, p. 2.

¹⁹ “Socio-economic Analysis of the Proposed Norval Quarry,” DPRA, May 2011, p. 88.

²⁰ Discussion with Jehovah’s Witness representatives at Public Information Centre.

Hamlet of Norval northerly to service Old Pinecrest Road. They also note the provision of a municipal water supply by the Region of Peel to service other residents and institutions in the area.

Brampton Brick Limited's AMP will include, among other items:

- A groundwater monitoring program;
- A baseline survey of private wells within 1,000 m of the licensed boundary;
- A complaints response program; and
- A water supply restoration program.

With respect to the AMP monitoring program and trigger mechanisms, Genivar states:

*"For the private well receptors, the AMP proposes three zones: 1) less than 800 m from the Stage 1 Excavation boundary for provision of a municipal water supply for any water use interference; 2) between 800 m and 1200 m from the Stage 1 Excavation boundary for rectification of interference caused by the quarry; and, 3) beyond 1200 m from the Stage 1 Excavation boundary no monitoring, triggers, or complaint process is proposed."*²¹

After the second round of peer reviews, Genivar has concluded that the information provided by Brampton Brick is insufficient and has major deficiencies. With respect to social effects the insufficiency is:

*"There is a reliance on the supply of a municipal water supply to residents with water wells within 5 years. While this contingency is reasonable to maintain a sufficient water supply well to the public, this is more of a planning issue for consideration by the City of Brampton."*²²

Based on the forgoing, HSAL believes that there will be social effects due to hydrogeological changes. These effects are considered in more detail in Section 7.2.4.

6.5 Transportation Effects

Figure 2 indicates the proposed haul route for the transportation of excavated shale from the proposed Norval Quarry to the Brampton Brick processing plant. The effect of transporting shale was assessed by Brampton Brick Limited, Paradigm Transportation Solutions through two reports commissioned in

²¹ *Draft Peer Review Assessment of a Level ½ Hydrogeological Technical Report Submitted to the Corporation of the City of Brampton in Support of a Quarry Zoning Application Review (Second Round Technical Review), Genivar Inc., December 4, 2012. P. A-1.*

²² *Draft Peer Review Assessment of a Level ½ Hydrogeological Technical Report Submitted to the Corporation of the City of Brampton in Support of a Quarry Zoning Application Review (Second Round Technical Review), Genivar Inc., December 4, 2012. P. 3-1.*

November 2008 and a response to a peer review report in May 2012. The City of Brampton commissioned the IBI Group to complete two rounds of peer review in February 2011 and January 2013. Because the proposed quarry is located on Winston Churchill Boulevard and is on a boundary road, the Halton Peel Boundary Area Transportation study completed by HDR iTrans in May 2010 is also relevant. The later studies have assumed that Winston Churchill Boulevard will be widened and improved to highway standards.

The 2008 Paradigm study states *“it is recognized that despite constant loading rates, the estimated traffic is not spread equally throughout the day. To account for this the conservative peak hour factor of 0.75 was used to estimate the peak hour truck volume generated by the site. The trip generation estimates are summarized in **Table 3** below. These estimates indicate that the quarry will generate approximately 22 new truck trips or 66 new passenger car equivalent trips in the AM and PM peak hours, respectively.”*

TABLE 1: TRIP GENERATION ESTIMATES²³ Measure Units Input Calculation

Annual Rate of Extraction	tonnes/year	200,000
Operating Days per year	days/year	200
Average Extraction per day	tonnes/day	16
Average Number of Trucks per day	trucks/day	63
Operating Hours per day	hours/day	8
Average Number of Trucks per hour	trucks/hour	8
Peak Hour Factor		0.75
Peak Hour Truck volume	trucks/hour	11
Passenger Car Equivalent	pce's/truck	3
Peak Hour Entering Volume	pce's/hour	33
Peak Hour Exiting Volume	pce's/hour	33

As a result, the social effect will be additional trucks throughout the day travelling along the haul route at the same time that local residents will be driving, walking, cycling or waiting for school buses along the haul route. That said, compared to other quarries, the number of truck trips is small. In addition, the community currently experiences a higher volume of trucks along Winston Churchill Boulevard, without a significant social effect occurring. Thus, there is minimal likelihood of truck trips creating significant social impacts.

HSAL believes that there will be minor social impacts on the haul route study area. These are considered in more detail in Section 7.2.5.

²³ Final Report, Norval Shale Quarry Transportation Assessment, Paradigm Transportation Solutions Inc, November 2008, p. 19.

7.0 ASSESSMENT AND EVALUATION OF SOCIAL EFFECTS

Overall, HSAL agrees and has in general followed DPRA's approach to assessing social impacts based on the following:

- *"A review of residents' concerns related to quarry activities and trucking;*
- *Findings of technical reports related to noise, air quality, visual effects, hydrogeology, the natural environment and traffic;*
- *Results of surveys and interviews;*
- *Senior staff professional judgement; and*
- *Experience with other resource development projects."*²⁴

The exception is, there are several areas where social effects may be present that should have been given more weight and there are other areas of potential effect that have not been fully addressed by Brampton Brick Limited consultants (property values and vibration).

HSAL has provided less weight than DPRA on potential social effects resulting from natural environmental and cultural heritage as social effects. While important, social effects from the natural environment and cultural heritage, in our opinion, have a secondary impact on people compared to direct impacts associated with noise, dust and vibration. Moreover, impacts associated with natural environment and cultural heritage are adequately addressed by other consultants.

7.1 Residents' Concerns Related to Quarry Activities and Trucking

In Section 8.1, DPRA provides a list of resident concerns in Table 40. The concerns are categorized into: environmental, social and traffic-related. Based on our research, HSAL was able to confirm many of the same resident concerns noted by DPRA; specifically, concerns about the availability and quality of water, concerns about noise and dust, decline in property values and peaceful attributes of the area, visual impacts and aesthetics, decreased standard of living and truck impacts due to noise, air quality, trucks speeding in an area needing road improvements.

HSAL attended the Public Open House held by the City of Brampton on October 17, 2011 and met with local residents. HSAL notes that local residents have additional concerns not identified by DPRA, such as: safety of children waiting by the roadside for a school bus in relation to quarry trucks and dust effects that may impact the growing of soft fruit and commercial nursery stock.

The following is an analysis of the technical information in terms of the potential for social impacts due to the proposed Norval Quarry.

²⁴ *Socio-economic Analysis of the Proposed Norval Quarry*, DPRA, May 2011, p. 74.

7.2 Assessment of Social Effects

7.2.1 Visual Effects

Quarrying operations, stockpiling and loading of shale are all expected to have visual effects creating social impact. In contrast, DPRA cites visual impact assessment work by Todhunter Associates that concludes that *“the visual effects of quarry operations will be minimal due to mitigation by berms and plantings and, over time, rehabilitation activities.”*²⁵

While HSAL agrees that the berm, fencing and vegetative plantings will minimize the visual effect, HSAL believes that DPRA may have underestimated the berm itself as a visual effect because the berm constitutes a significant change in the community characteristic of the industrial activity being proposed to occur beyond the structure. While the AMP has a good chance of reducing the effect through appropriate vegetative buffering, it will be challenging to completely mitigate the effect due to the introduction of a new feature (i.e., the berm). Furthermore, DPRA did not have the second round of analysis and peer review available when it drew conclusions. The later technical studies give more emphasis to the negative effects of the berm.

Several residents on the east side of Winston Churchill Boulevard have decks, backyards and outdoor recreation spaces that would be facing the proposed berm. This is significant because the Rockfort Quarry decision OMB File No. 0000191 November 12, 2010 noted that there is a visual impact from berms both for local residents and for berms that create a change in the cultural/heritage characteristics of an area for the wider community. For the Rockfort decision, berms were considered to be a significant social change at 6 m. The proposed Norval Quarry berm is 4.5 m in height with the proposed stockpile being 7 m high. A recent amendment to the Brampton Brick Noise Impact Study Report²⁶ has suggested an increase in the barrier height for three berms: the northwest barrier from 242 m to 244 m; the southeast barrier from 248-9 m to 251 m; and the western barrier is to increase by 1.5 m.

With respect to the second round of peer reviews, Dillon raises the concern about people viewing the berm from the north in houses yet to be built. Given that the City of Brampton’s Official Plan requires that future occupants of the proposed homes be notified of the quarry in advance under the NWBPA policy designation, an informed decision to live in this location indicates an acceptance of potential social effects. Dillon raises the concern that vegetation may take time to develop or may be ineffective. Should this occur, social impacts would be expected. However, the proponent is proposing annual planting and inspection of landscaped areas early in the growing season and ongoing communication with residents. Thus, it would be anticipated that this effect could be mitigated through Brampton Brick Limited’s AMP. Even so, the berm and Brampton Brick Limited operations introduce an industrial use within a quiet, established residential community thus changing the sense of place.

²⁵ “Socio-economic Analysis of the Proposed Norval Quarry,” DPRA, May 2011, p. 85.

²⁶ Noise Impact Study Report Addendum #1. Aercoustics Engineering Limited. September 18, 2012.

Dillon raises the issue of the loss of scenic views for many years. While we agree, we have assessed this social impact in comparison to the considerable loss of permanent scenic views that would occur for some residents as a result of future homes, transportation corridors and commercial centres. The visual effect of these changes was not discussed by either Dillon or Todhunter. Overall, we conclude that a social impact will be created due to the presence of berms, however, the effect will occur for only a few residents located on the east side of Winston Churchill and Old Pinecrest Road.

Dillon raises the concern about headlights from trucks. It is estimated that 11 trucks would be exiting the site at the peak hour (Table 3). HSAL assumes that the peak hour would be the same for late or early winter hours when headlights would be noticeable to residents. While HSAL does not have information about headlights shining into homes due to existing traffic or due to future traffic associated with the reconstruction of Winston Churchill Boulevard, HSAL is concerned about the potential for light pollution (i.e., truck lights shining into residential homes) when trucks are exiting the proposed quarry. This is a social impact that should be addressed through mitigation measures.

7.2.2 Noise and Vibration

Social impact assessors typically look for sound levels to be 5 dBA or higher as a measure of social impact. Thus, it appears that while noise levels will have minimal social impact, it will be important to local residents and businesses that mitigation measures work, so as to avoid social effects due to noise.

Aercoustics Engineering Limited predicts worst case noise levels. They state *"...the worst-case levels from the quarry operations comply with the recommended sound level limits at all surrounding residences. With the incorporation of appropriate noise controls as outlined above, the Norval Quarry will operate in compliance with the Ministry of Environment for stationary sources."*²⁷

They conclude that road sound traffic due to truck traffic from the quarry will be up to an increase of 3 dBA. This level is considered acoustically insignificant.²⁸

Brampton Brick Limited noise studies focus on long term noise due to an operating facility rather than shorter term noise resulting from facility construction activity. Quarries as sources of noise are somewhat unique as the construction of berms and excavation and rehabilitation areas may occur over many years. Construction and rehabilitation activities may also generate noise but are not subject to MOE noise regulations. The issue becomes, how significant will noise due to these activities be for local residents and businesses?

DPRA appropriately points to survey data indicating that residents in the 0 m – 500 m zone are largely retired and at home during the day. Further, they place a value on quiet and peaceful enjoyment of their property, therefore noise is a concern during on and off peak hours.

²⁷ Norval Quarry Noise Control Study, Aercoustics Engineering Limited, July 2012, Table 2, p. 4.

²⁸ Norval Quarry Noise Control Study, Aercoustics Engineering Limited, July 2012, Table 3, p. 5.

“The Aeroacoustics report indicates that construction activity related to site preparation and rehabilitation activities will have elevated noise levels because of minimal acoustical shielding during these times.”²⁹

Brampton Brick has made a commitment to comply with noise guidelines during construction and pit rehabilitation. However, local residents will experience noise for a prolonged period of time while the berm and quarry are being constructed and during rehabilitation. While temporary, this will be a social impact for local residents.

Section 8.2.3 of the DPRA report predicts impacts in the 500 m to 1000 m study area. They predict noise levels for residents further from the site and in the Hamlet of Norval will experience less or no change in noise levels due to both distance and the presence of existing roadway noise. They state:

*“The 10 residences located along the haul route in this study area may experience disruption of their use of outdoor property, particularly their roadside activities, if traffic volumes make entry and exit from their properties more difficult. While noise and volume from truck traffic are of concern to some residents along this portion of the haul route, the predicted level of noise increase from the volume of quarry trucks alone is not expected to be significant”.*³⁰

Thus, they conclude noise from Brampton Brick Limited trucks along the haul route is expected to be insignificant and lower than MOE guidelines. We agree.

Vibration from quarrying and mining can, as a worst case, result in cracks in walls, falling items or mild disturbances for local residents. As the proponent is not proposing to use blasting, we anticipate that effects due to vibration will be minimal. Yet, a bulldozer will be used for scraping shale and materials will be elevated and deposited on a stockpile potentially resulting in vibration effects. We note that residents’ concerns include vibration impacts.

The effect of vibration was not assessed in the proponent’s technical reports nor was vibration addressed by DPRA. The time to assess potential social effects due to vibration is before the project occurs. In the opinion of HSAL, additional data on potential vibration effects should have been provided.

7.2.3 Air Quality

HSAL noted earlier that residents and businesses from 0 m to 500 m from the proposed Norval quarry engage in activities that are sensitive to dust. However, HSAL notes that the technical specialists for both Brampton Brick and the City of Brampton have concluded that with the berm and other mitigation measures and the BMPP in place, dust will not be significant. However, there is some residual risk. Given that local residents are sensitive to dust, if dust management measures do not address these sensitive features there will be social impacts.

²⁹ “Socio-economic Analysis of the Proposed Norval Quarry,” DPRA, May 2011, p. 77.

³⁰ “Socio-economic Analysis of the Proposed Norval Quarry,” DPRA, May 2011, p. 94.

To address dust not addressed by the dust management plan, DPRA notes the concerns of local residents pertaining to dust and appropriately recommends a dust monitoring and reporting program. We note that the dust management program recommended by Long Environmental in the Brampton Brick Site Plan Report is largely 'complaints based'. They state:

*"dust monitoring may include perimeter dustfall stations and records of wind speed and direction, during operations, with specific investigation and reporting in the event of concerns expressed by neighbours."*³¹

In the experience of HSAL the priority is to avoid dust rather than mitigating the problem if there are complaints, particularly where local residents and their properties are potentially affected. A complaint-based management program also has the problem of local residents having to experience a social impact before the proponent is expected to take action.

Considerable urban development will occur in the vicinity of the quarry and the community and this activity will generate dust. Local agricultural activities also create dust. Dust management complaint-based programs may not be effective and the potential for social impact exists if the proponent is unresponsive, there is disagreement over the cause of the dust, the dust management solution is not effective, or damages due to dust are not adequately addressed. In a community setting where considerable dust generation will occur due to housing construction, road and highway construction and the construction of commercial and retail shopping areas, it may be difficult to ascertain which dust is due to quarrying activities and which is due to the activities of others. Thus, the BMPP should add proactive monitoring over a complaint based monitoring program to address potential social impacts.

With respect to community and recreational features potentially affected by dust in the 500 m to 1000 m study area, DPRA states:

*"None of these facilities are located close enough to the proposed quarry to be subject to dust from quarry operations. Quarry noise may be audible on occasion at some of the facilities, depending on levels of background noise. The quarry will not be visible from any of these facilities, nor are any of them located along the proposed haul route."*³²

Overall social impacts for local residents can be minimized with appropriate monitoring and management procedures.

7.2.4 Hydrogeology

The social effects due to hydrogeological changes are centred on 10 wells within the 1 m drawn down area and the potential effect on water supplies. In addition, social effects occur due to the risk of other

³¹ Norval Quarry Site Plan Report, Long Environmental Consultants Inc. July 2010, p. 64.

³² "Socio-economic Analysis of the Proposed Norval Quarry," DPRA, May 2011, p. 94.

residents and institutions risking losing water supplies. In assessing the potential social effects related to hydrogeology, several potential impacts are apparent:

- 1) The timing is out of sync in that excavation below the water line will potentially occur before local residents and institutions have access to municipal water supplies;
- 2) As municipal water supplies are considered as a mitigation measure, there is a secondary social effect for residents due to the provision of municipal water supplies. While municipal water is generally supported by most communities, in this instance, it means that residents may be required to pay for connections. This may result in an upward cost of \$25,000 to \$40,000 per household or institution. The costs of servicing may be difficult to pay for, particularly since many of the local residents are retired and many of the institutions are charities. Normal municipal practice involves polling the residents to determine if they want to connect to local distribution. In this instance, municipal water supplies can be considered, in part, a requirement for Brampton Brick to minimize the social impact of the proposed Norval Quarry;
- 3) Without municipal water, local residents and institutions are dependent on the success of Brampton Brick's AMP program;
- 4) The AMP program will require residents to allow Brampton Brick Limited to monitor their wells and some wells may need to be lowered as part of the AMP; and,
- 5) The monitoring of the lack of water is in part, based on complaints. This means that local residents will potentially need to interact with Brampton Brick Limited for a long period of time if there are water losses identified for any reason. A lot depends on the relationship between Brampton Brick Limited and local residents being successful.

For local residents, the AMP means that they will have to experience a problem with their water supplies and then complain before action is taken. Furthermore they will have to prove that Brampton Brick Limited is the source of the problem in contrast to the effects of a warm dry summer or increased consumption.

In the experience of HSAL, this sort of proponent-based monitoring and complaints response system can work well but it can also have critical flaws leading to local residents having to take additional action to remediate issues of water loss. The time lag between detecting a decline in water quality and quantity and implementing mitigation measures may have an additional social impact as residents could be involved in disagreements over whether the cause of water decline is a hot dry summer or the action of Brampton Brick Limited at the Norval Quarry.

Under this scenario, the impact monitoring program may place more burdens on local residents and institutions than an impact avoidance-based program. Brampton Brick Limited does not recommend paying for or facilitating the provision of municipal water supplies or developing avoidance measures that would be acceptable to local residents.

In Section 8.2.2.2 DPRA describes the ‘Disruption of Community and Recreational Features’ in the 0 m to 500 m study area. Each of the local institutions is listed and an analysis is completed. Overall the analysis is sound and HSAL can concur with the findings. The exception is the potential impact on the water supply to institutions that are dependent on well water. These institutions include the Jehovah’s Witness Centre and St. Nirankari Mission. The need for water and impacts of a loss of water due to the quarry would be significant for these organizations.

In our opinion, the AMP for water could be assisted by implementation of a legally binding community impact agreement. Residents and local businesses would need to receive support in negotiating the agreement. The agreement with residents would need to be in place before the approval of the Brampton Brick Limited Norval Quarry is approved. There would have to be some agreement between Brampton Brick and residents of who pays, how disputes are resolved and when, with respect to the provision of water supplies and other matters.

7.2.5 Transportation

Based on the technical analysis and the proposed reconstruction of Winston Churchill Boulevard, it is not anticipated that the social impacts along the haul route will be significant.

DPRA cites the November 2008 study of Paradigm Transportation Solutions Limited as the source data pertaining to social effects due to truck traffic. DPRA observes that 10 of the 37 residences in the 0 m to 500 m study area are also located along the proposed haul route, thus experiencing impacts from two sources: the haul route and the quarry.

Further, they note that most of the residents are concerned about current truck traffic along Winston Churchill Boulevard. HSAL notes that residents do not feel safe now in undertaking their normal roadside activities, such as biking, dog walking and waiting for school busses. While residents point to trucks originating from the quarry as an issue, HSAL has assumed that the reconstruction of Winston Churchill Boulevard will significantly increase traffic. However, it will also improve the safety for residents involved in roadside activities.

Quoting Long Environmental, DPRA states, *“The Regions of Peel and Halton have proposed to reconstruct Winston Churchill Boulevard, from Old Pinecrest Road northerly to Mayfield Road during 2013. The reconstruction will be to truck route standards, consistent with its designation as a major arterial road.”*³³ Overall 3 loads per hour on average are considered to have a small social effect.

In reviewing the IBI Group’s peer review for Transportation Assessment Zoning Application Review³⁴, we note that they raise the concern of Brampton Brick Limited not looking at potential deficiencies at all intersections along the haul route. They note that it may be that no impacts are anticipated, but

³³ *Socio-economic Analysis of the Proposed Norval Quarry*, DPRA, May 2011, p. 24.

³⁴ *Draft Report, Peer Review for Transportation Assessment Zoning Application Review*, IBI Group. January 2013.

documentation is required. Overall, with the reconstruction of Winston Churchill Boulevard, City of Brampton transportation reviewers conclude that the quarry can proceed, “...provided that the reconstruction of Winston Churchill Boulevard includes the assumed mitigation of existing issues and that the work is completed before the proposed quarry is opened.”³⁵

Conversely, “...it is advised that the quarry not be opened before this work is finalized, unless it can be determined that there are no impacts.”³⁶

Section 8.2.4. of the DPRA report assesses social impacts in the haul route study area. In this section, DPRA assesses potential impacts of residences, businesses and institutions located along Winston Churchill Boulevard that are beyond the 500 m to 1000 m study area and extending up to Mayfield Road. Two additional institutional facilities are identified: Alloo Public School and Alloo United Church.

DPRA concludes that 3 trips (6 pass-bys) per hour will not have significant effects to residents, businesses, community and recreational features. HSAL does not see this increase in average truck traffic as having a significant social impact. We note that a peak morning hour could have 22 trucks passing a residence. However, this increase occurs in the context of the current morning peak of 238 to 304 vehicles travelling by the same residence. HSAL is able to reach the same conclusion as DPRA with respect to minor social impacts on the haul route study area.

7.3 Additional Predicted Effects

7.3.1 Property Value Changes

DPRA notes in Section 8.2.5.3 that many residents are concerned about property value effects. Some residents are concerned that the few homes near the proposed Norval Quarry that are currently for sale have been experiencing trouble selling. The DPRA states that:

“Loss in property value occurs due to physical and/or aesthetic impacts and/or negative perceptions of a facility. Past studies related to property values in close proximity to extractive and industrial land uses have been inconclusive....Regarding proposed impacts, the proposed Norval shale quarry differs from the more common dolostone /limestone quarries in that there will be no drilling, blasting, on-site processing or aggregate washing.”³⁷

In Section 11.3 Impact Management Recommendations, DPRA recommends the:

³⁵ Draft Report, Peer Review for Transportation Assessment Zoning Application Review, IBI Group. January 2013, p. 6.

³⁶ Draft Report, Peer Review for Transportation Assessment Zoning Application Review, IBI Group. Jan 2013, p. 8.

³⁷ Socio-economic Analysis of the Proposed Norval Quarry, DPRA, May 2011, p. 99.

“[The] Establishment of a property value protection program (‘PVP’) for the specific properties that may experience nuisance effects and the related impacts. The PVP should have clear procedures to determine property values and a selling process that is based on current community experience.”³⁸

In the experience of HSAL, quarries may create negative property value effects at specific periods of their construction and operation. We therefore concur with the recommendation of DPRA that a PVP program should be implemented.

7.3.2 Vibration

HSAL acknowledges that the proposed shale quarry is different than a limestone or other types of quarries that would involve blasting, however, there will still be heavy equipment on site and the movement of material. As there is no data on vibration effects for local residents, we suggest that data be developed on the potential for vibration causing social impacts.

7.3.3 Socio-Economic Benefits Locally and Across Ontario

Long Environmental states: *“Brampton Brick Limited and its predecessor companies have been contributing to the economy of Brampton and Peel for more than 100 years. It is a major Canadian owned manufacturer of clay brick. Provincially significant Queenston shale is the sole raw material, from which clay brick are produced in eastern Canada...Utilization of local raw materials is an important sustainability criterion.”³⁹*

Section 8.2.5.4 of the DPRA study addresses socio-economic benefits. They note that the shale will be used to produce brick that will be used for building homes and townhomes. Having shale close at hand will have a beneficial social effect for the wider Brampton community and beyond. While employment at the Norval Quarry will be small, (one full time employee and 3 summer employees) the quarry will contribute to Brampton Brick corporate employment levels. HSAL did not analyse in detail wages and salaries, corporate donations, taxes paid and economic multiplier effects, as the findings and conclusions of DPRA are in line with typical companies of this size. However, we observe that the socio-economic impact of this employment and spending is not insignificant.

Section 8.2.6 of the DPRA study outlines the various types of direct, indirect, induced and cumulative socio-economic impacts. Overall, HSAL is able to agree with DPRA’s description and analysis of the beneficial socio-economic effects.

³⁸ *Socio-economic Analysis of the Proposed Norval Quarry*, DPRA, May 2011, p. 107.

³⁹ *Norval Quarry Site Plan Report Long Environmental*, August 2010, p. 6.

8.0 RESIDUAL SOCIAL IMPACTS

Based on HSAL's analysis we are able to identify the following residual social impacts: 1) visual effect; 2) change in sense of place for the local community; 3) loss of water; and 4) disruption effects.

8.1 Visual Effect

Residents on the east side of Winston Churchill Boulevard and Old Pinecrest Road will be able to see the construction and rehabilitation of the berm. These activities and the berms will be an industrial activity in the vicinity of a quiet rural community. While the extent and duration of the social impact will depend on the effectiveness of vegetative screening and the AMP, this social impact will occur for long period of time.

8.2 Sense of Place

This is a community about to see considerable changes in their immediate vicinity due to urbanization. The first change the local community will experience will be increased urban traffic due to the reconstruction of Winston Churchill Boulevard. Normal practice would be to install municipal water and sewage services at the same time. The provision of municipal water supply will be another change in their sense of place as it replaces the well water currently characterizing resident water use. The construction and operation of the Brampton Brick Norval Quarry will be an activity in parallel to urban development associated with Heritage Heights and the future transportation corridors. DPRA notes:

*" the introduction of an industrial use into a rural and agricultural community has the potential to change the character and image of a community. Increases in noise, dust, changes to the view shed, traffic and traffic noise have the potential to change how residents and visitors to the community view its key characteristics."*⁴⁰

However, they also note that: 1) the proposed quarry will not be visible within the broader community; 2) the extent of physical nuisance effects is expected to be minor and localized; 3) trucks will be travelling away from the Village of Norval, and; 4) regular communications, monitoring results, complaints and response protocol have the potential to moderate effects. Further, at the end of its life, quarry rehabilitation and closure will provide a rural, natural environment for local residents.

HSAL is able to agree with the conclusions of DPRA with respect to social impacts in the broader community study area. However, we conclude that the sense of place will change for local residents within the 0 m to 500 m study area due to the proposed Norval Quarry. We consider this a social impact.

⁴⁰ *Socio-economic Analysis of the Proposed Norval Quarry*, DPRA, May 2011, p. 97.

8.3 Loss of Water

As discussed earlier, the potential loss of water and the lack of an effective community monitoring and management protocol will be a social impact for local residences and institutions. The proposed AMP is not fully developed and there are strong indications that residents will be burdened with the task of negotiating with Brampton Brick Limited over a range of issues. HSAL concludes that this is a significant social impact.

8.4 Disruption Effects

Not all of the effects of the quarry will be managed. While the effects may be intermittent and short term in duration, there will still be disruptive social impacts for local residents due to truck headlights, occasional dust, potential for property value change and occasional noise. Without appropriate mitigation measure and monitoring measures during construction and rehabilitation these social impacts will be more significant.

9.0 CONCLUSIONS

Because SIA studies have many benefits such as (i) community involvement resulting in strategies to minimize potential disruption, (ii) prevention of potential health and safety hazards, and (iii) cost savings over the long-term, they have become increasingly important components of project evaluation and planning processes in the province of Ontario.

Moreover, many municipalities require that SIA studies are completed in advance of approvals so as to gain a better understanding of the social impacts associated with proposed projects, programs or policies and to ensure appropriate measures are put in place to mitigate adverse impacts. Indeed, socio-economic impacts are recognized as important considerations in policies and regulations, such as The Aggregate Resources Act; The Provincial Standards Policy; The Provincial Policy Statement; regional Official Plans; and, local Official Plans, to name a few.

DPRA concludes that the potential effects of the proposed Brampton Brick Norval quarry include:

- *“Quarry truck movements (6 per hour) on Winston Churchill Boulevard;*
- *Occasional truck noise on the haul route;*
- *Occasional dust from the quarry trucks on the haul route;*
- *Regular noise increases from the quarry site above ambient levels for nearby residences;*
- *Occasional noise increases for more distant residences;*
- *Occasional detectable dust from the quarry operations; and*
- *Visual changes at the quarry site due to berming.” (p. 104)*

DPRA further concludes that:

“Based on the analysis in this report, it is our conclusion that net social and economic effects will not be significant with the full implementation of the mitigation and impact management measures as identified in this report.”

It is the opinion of HSAL that based on the information available, the social impacts resulting from quarry construction and operations will include:

1. Noise, dust, and visual intrusion, as well as disruption during periods of construction and rehabilitation for some local resident on the east side of Winston Churchill and Old Pinecrest Road;
2. Disruption due to headlights, occasional noise and dust during operations for other local residents;
3. Burden on local residents to become involved in managing their relations with Brampton Brick Limited, Provincial Agencies, Peel Region and the City of Brampton with respect to the community impacts, AMP for water loss, Dust Management Plan, Property Value Protection Plan; and,
4. Potential loss of well water and consequent activities requiring monitoring and correcting social impacts associated with the loss. In addition the AMP will require residents to complain and enforce actions following a complaint, should there be a loss of water.

In addition, it is also HSAL’s opinion that residents will be required to work with Brampton Brick Limited to develop and implement a complaints and issues resolution protocol and actively participate with Brampton Brick to determine acceptable and appropriate site rehabilitation and closure. Moreover, residents will also be required to actively manage information about the change in property values. In sum, if management measures are not effective, local residents will be required to become active in managing potential social impacts due to the Norval Quarry for many years.

HSAL therefore concludes that there will be residual social impacts associated with the construction and operation of the proposed quarry despite the proposed impact management measures proposed by DPRA. HSAL further concludes that the social effects are significant enough that Brampton Brick Limited should put into place additional social impact avoidance measures if the quarry is to be approved. If these measures are not in place, the quarry should not be approved.

10.0 BIBLIOGRAPHY

PROTOCOL

City of Brampton. *Aggregate Review Protocol, Statement of Community Involvement with the JART Process*.

City of Brampton. *Policy Overview*.

RATIONALE

Brampton Brick. *Norval Quarry, City of Brampton, Peel Region, Report on Shale Quality*. September, 2008.

Turkstra Mazza. *Proposed Norval Quarry Application for Category 2, Class A License – Northwest Brampton Landowners Group Ltd.: Notice of Objection*. December 20, 2010.

SOCIAL IMPACT

DPRA. *Socio-economic analysis of the Proposed Norval Quarry*. May 30, 2011.

PLANNING CONSIDERATIONS

Appellant Form (R2) Planning Act – Zoning By-laws and Amendments, Completed, January 12, 2011.

Brampton Brick Limited. *Vegetation Management Plan*. July, 2010.

Brampton Brick Limited. *Norval Quarry Draft Site Plan*. November, 2008.

The Corporation of the City of Brampton. *Recommendation Report: Proposed Norval Quarry Rezoning Application and Aggregate Resource License Application On-Going Review*. May 11, 2011.

The Corporation of the City of Brampton. *City of Brampton Official Plan, 2006*. As approved by the OMB Oct. 7, 2008

The Corporation of the City of Brampton. *Application for Zoning-Bylaw Amendment by Brampton Brick Limited*. December 2, 2008.

The Corporation of the City of Brampton. *Status Report, Heritage Heights Community, Secondary Plan Areas 52 and 53*. February 27, 2012.

Long Environmental Consultants Inc. *Corporation of the City of Brampton Draft Zoning By-law Amendment to Bylaw 270-2004 and Explanatory Note*. December, 2008.

Long Environmental Consultants Inc. *Norval Quarry Planning Report*. November, 2008.

Long Environmental Consultants Inc. *Norval Quarry Site Plan Report*. July, 2010.

Long Environmental Consultants Inc. *Norval Quarry Site Plan*. July, 2010.

Regional Municipality of Peel. *Region of Peel Official Plan (Office Consolidation)*. November, 2008.

Region of Peel. *Brampton Brick Norval Quarry Application – Comments on Regional Issues*. March 6, 2012.

Stonybrook Consultants. *Preliminary Comments, Brampton Brick Norval Quarry Environmental Reports*. December 18, 2010.

AIR QUALITY

RWDI Air Inc. *Proposed Norval Quarry Peer Review of Air Quality Assessment*. February 15, 2011.

RWDI. *Proposed Norval Quarry, Second Peer Review of Air Quality Assessment to City of Brampton, (DRAFT)* RWDI Reference Number: 1011996. August 30, 2012.

SENEC Consultants Limited. *Review of the Brampton Brick Norval Quarry Technical Reports Air Quality*. December, 2010.

Stantec Consulting Limited. *Brampton Brick Norval Quarry – RWDI Review of Air Quality Report, Memorandum*. December 21, 2011.

Whitford, Jacques. *Air Quality Assessment Report, Brampton Brick Limited, Norval Quarry*. November 21, 2008.

CULTURAL HERITAGE

Archaeological Services Inc. *Cultural Heritage Study: Stage 1 and 2 Archaeological Assessment and Built Heritage and Cultural Landscape Assessment, The Brampton Brick Norval Property, Part of Lot 12, Concession 6 WHS*. November, 2008.

Archaeological Services Inc. *Heritage Impact Assessment*. July 2010.

Archaeological Services Inc. *Curry Site Stage 3 Archaeological Assessment*. July 2010.

Archaeological Services Inc. *Curry Family Cemetery Stage 3 Archaeological Assessment*. July 2010.

Archaeological Services Inc. *Response to Norval Quarry Rezoning Application (Brampton Brick) Peer Review of the Cultural Heritage Study and Cultural Heritage Impact Assessment Report, Memorandum*. March 28, 2012.

Unterman McPhail Associates. *Norval Quarry Rezoning Application (Brampton Brick) Peer Review of the Cultural Heritage Study and Cultural Heritage Impact Assessment Report Prepared by Archaeological Services Inc.* February 8, 2011.

Unterman McPhail Associates. *Second Peer Review, Response to Norval Quarry Rezoning Application (Brampton Brick) Peer Review of the Cultural Heritage Study and Cultural Heritage Impact Assessment Report*, prepared by Archaeological Services Inc. March 28, 2012.

Unterman McPhail Associates. *Part Two Cultural Heritage, Norval Quarry Rezoning Application (Brampton Brick) Peer Review Results Chart, Cultural Heritage Resources.* November, 2012.

URS Canada Inc. *Peer Review of Three Archaeological Reports(Draft): Stage 1 and 2 Archaeological Assessment and Built Heritage and Cultural Landscape Assessment; Stage 3 Archaeological Assessment of the Curry Site; and Stage 3 Archaeological Investigations to Relocate the Curry Family Cemetery.* February, 2011.

TRANSPORTATION

BA Group. *Review of Brampton Brick Quarry Application Transportation Study.* December 13, 2010.

HDR iTrans. *Halton-Peel Boundary Area Transportation Study Amended Final Report.* May, 2010.

IBI Group. *Peer Review for Transportation Assessment Zoning Application Review (Draft).* February, 2011.

IBI Group. *Draft Report, Peer Review for Transportation Assessment Zoning Application Review.* January 2013.

Paradigm Transportation Solutions Ltd. *Norval Shale Quarry Haul Route Study Final Report.* May, 2012.

Paradigm Transportation Solutions Ltd. *Final Report Norval Shale Quarry Transportation Assessment.* November, 2008.

HYDROLOGICAL AND HYDROGEOLOGICAL

Genivar Inc. *Peer Review of a level 1 / 2 Hydrogeological Technical Report Submitted in Support of Quarry Zoning Application Review, Proposed Norval Quarry.* January, 2011.

Genivar Inc. *Draft Peer Review Assessment of a Level ½ Hydrogeological Technical Report Submitted to the Corporation of the City of Brampton in Support of a Quarry Zoning Application Review (Second Round Technical Review).* December 4, 2012.

Golder Associates. *Formal Response to Peer Review Assessment of a Level 1 / 2 Hydrogeological Technical Report Submitted in Support of a Quarry Zoning Application Review – Proposed Norval Quarry, Memorandum.* January 16, 2012.

Golder Associates. *Preliminary Hydrogeological Assessment of the Proposed Norval Quarry*. November, 2008.

Golder Associates. *Level 1 / 2 Hydrogeological Technical Report and Maps and Appendices. Norval Quarry, Brampton Brick Limited*. July, 2010.

S.S. Papadopoulos and Associates Inc. *Groundwater Modelling, Outstanding Issues and Request for Information*. December 17, 2010

NATURAL ENVIRONMENT

Beacon Environmental. *Natural Environment Report Proposed Norval Quarry City of Brampton*. December, 2008.

Beacon Environmental. *Formal Response to Natural Environmental Report Level 2 Peer Review*. May 11, 2012.

Credit Valley Conservation. *Norval Quarry Application by Brampton Brick, Memorandum*. January, 2012.

Ecoplans Limited. *Norval Quarry/Brampton Brick Peer Review – Natural Environment (draft)*. February, 2011.

Ecoplans Limited. *Draft Norval Quarry/Brampton Brick Peer Review, Natural Environment – Round 2*. December 4, 2012.

NOISE

Aercoustics Engineering Limited. *Preliminary Noise Control Study – Norval Quarry Part of West Half lot 12, Conc. 6 W.H.S., City of Brampton Region of Peel*. November 28, 2008.

Aercoustics Engineering Limited. *Norval Quarry Noise Control Study*. July 14, 2010.

Aercoustics Engineering Limited. *Noise Impact Study Report Addendum #1*.

Aercoustics Engineering Limited. *Brampton Brick Norval Quarry – Ambient Sound Level Monitoring, Memorandum*. December 6, 2011.

Aercoustics Engineering Limited. *Brampton Brick Norval Quarry – Noise Study Peer Review, Memorandum*. April 16, 2012.

Howe Gastmeier Chapnik Limited. *Second Peer Review of Noise Impact Assessment, Proposed Norval Quarry, Brampton Brick Limited (Draft)*. November 8, 2012.

Howe Gastmeier Chapnik Limited. *Peer Review of Noise Impact Assessment, Propose Norval Quarry, Brampton Brick Limited (Draft)*. February 17, 2011.

Valcoustics. *Proposed Norval Quarry Noise Study*. December 20, 2010.

AGRICULTURAL

AgPlan Limited. *Draft Second Peer Review Concerning the DBH Soil Services Addendum Surficial Soils Assessment Brampton Brick Application*, Prepared for The City of Brampton. January 31, 2013.

Conna Consulting. *Peer Review Norval Quarry Application Surficial Soils Study and Agriculture*. December 16, 2010.

DBH Soil Services Inc. *Surficial Soil Study West Half of Lot 12 Concession 6 WHS, City of Brampton, Regional Municipality of Peel*. August, 2008.

DBH Soil Services Inc. *Addendum and Peer Review Response for the Norval Quarry Surficial Soil Study* March 28, 2012.

VISUAL

Dillon Consulting. *Visual Impact Assessment Peer Review Report (Draft) for the Norval Quarry*. February 10, 2011.

Naylor, E., Dillon Consulting. *Peer Review of the May 8, 2012 document prepared by Todhunter Associates., Visual Assessment & Management Plan for the Norval Quarry*. November 15, 2012.

Naylor, E., Dillon Consulting. *Norval Quarry Rezoning Application (Brampton Brick) Preliminary Peer of the May 8 2012 Visual Impact Assessment Report*, Prepared by Todhunter Associates. November 18, 2012.

STLA Design Strategies. *Review of Norval Quarry Visual Assessment and Vegetation Management Plan* (Todhunter Associates). December 14, 2010.

Todhunter Associates. *Norval Quarry Visual Assessment and Vegetation Management Plan* May 8, 2012.

Todhunter Associates. *Response to Visual Impact Assessment Peer Review Report for the Norval Quarry*, Memorandum. May 8, 2012.

Todhunter Associates. *Visual Assessment Report Norval Quarry*. November, 2008.

Todhunter Associates. *Visual Assessment and Vegetation Management Plan*, Norval Quarry. July 20 2010.

PUBLIC CORRESPONDENCE

Various correspondence between the Corporation of the City of Brampton, Region of Peel, Town of Halton Hills, Halton Region, Credit Valley Conservation, Legal Services, Ministry of Natural Resources, Norval Pit-STOP Community Organization, and the Northwest Brampton Landowners Group Ltd.