

**J.E. COULTER
ASSOCIATES
LIMITED**

Consulting Engineers in
Acoustics, Noise & Vibration

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DRAFT

April 27, 2022

Regional Municipality of Halton
1151 Bronte Road
Oakville, ON
L6M 3L1

Attention: Chris Barnett

**Re: Peer Review of Noise Impact Assessment
Nelson Aggregate Quarry Extension
Burlington, Ontario**

At the request of the Region of Halton, J.E. COULTER ASSOCIATES LIMITED has conducted a peer review of the Noise Impact Assessment Study for the Nelson Aggregate Quarry Extension, prepared by HGC Ltd., dated November 15, 2021 and April 22, 2020. The Acoustic Assessment Report of the Halton Asphalt Supply located in the quarry, dated April 27, 2021 and February 7, 2020, was also reviewed. The Planning Justification Report and ARA Statement dated April 2020 mentions that Nelson Aggregate Co. is applying for a maximum tonnage of 2 million tonnes per year; however, they plan on extracting an average of 1 million tonnes per year. We understand the idea behind the larger figure is that occasionally there might be a surge in volume and the surge would be taken up by the larger figure. As per MECP's *NPC 300*, the evaluation should be for the predictable worst case, which would be the peak of the surge of 2 million tonnes per year.

Background

The Nelson Aggregate quarry is located at 2433 No. 2 Side Road, Burlington. It is bounded by Guelph Line to the west, No. 2 Side Road to the south, Cedar Springs Road to the east, and Colling Road to the north. See Figures 1 and 2 in Appendix for a Key plan.

The site is an open aggregate quarry employing mobile equipment to extract and transport raw materials to stationary processing equipment (screeners and crushers). The processed aggregate products are shipped via highway transport trucks. A hot-mix asphalt plant is also supposed to be located inside the quarry.

Nelson Aggregate currently proposes two new extraction areas referred to as the West Extension and South Extension. The extraction activities and processing of aggregate for the proposed extensions will occur from 07:00 to 19:00 hours on Monday to Friday. The shipping of aggregate products is proposed to occur from 06:00 to 19:00 hours but could occur on a 24-hour basis. The asphalt plant is proposed to operate on a 24-hour basis.

Criteria

There are existing residences located all around the site. The acoustical environment in the area is characterized as a Class 2 area in accordance with the MECP guidelines in *NPC-300*. The

MECP assertion regarding the Class of the area is provided with a caveat that the planning authority is required to be in agreement with this characterization. In this case, such an agreement would pivot on whether or not the roadway traffic generated ambient sound was a simple substitution of the activity for the past many years or if the starting point of the evaluation was with the operations starting from the closure of existing gravel operations. It would be most helpful if the ambient noise from the individual roadways is mapped. This would identify that the nighttime period is very sensitive (2 trucks per hour shipping). There would be two versions for ambient noise, with and without the quarry operation.

The Ministry of the Environment, Conservation and Parks' (MECP's) applicable criteria to a site such as this are found in its publication *NPC-300* "Environmental Guide for Noise, Stationary and Transportation Sources – Approval and Planning."

MECP considers activities generated by fixed or mobile sources of noise within non-transportation facilities to be stationary sources. *NPC-300* basically states the average noise of the stationary source should not exceed the average noise of the roadway traffic during the same hourly time period or the exclusion limits, whichever is higher. The exclusion limit is the lowest value of sound level limit at a specific point of reception for the stationary source (i.e., the sound level limit when the background sound level is below this exclusion limit).

For Class 1 areas (Urban), the exclusion limits that apply are 50 dBA L_{eq} during the daytime (07:00–19:00 hours) and 50 dBA L_{eq} during the evening (19:00–23:00 hours). For Class 2 areas, the criterion levels that apply are 50 dBA L_{eq} during the daytime and 45 dBA L_{eq} during the evening hours and, for Class 3 areas, the criterion levels that apply are 45 dBA L_{eq} during the daytime and 40 dBA L_{eq} during the evening hours.

A "stationary noise source," to which the guideline applies, is defined in the interpretation section of the MECP guideline as being everything on a property, with a series of exceptions. The time period over which the sound is averaged is 1 hour.

Recommendations

1. This acoustic report should clarify if the existing quarry and the proposed extension will operate simultaneously until the existing licence expires. The report should also outline how truck traffic will be managed when the existing quarry, the proposed extension, and the asphalt plant operate simultaneously. It appears there is no limitation as to when the extension can operate. The additional operations could trigger a 5 dB impact from activity on the property and along some of the access routes for shipping. 5 dB is the measure of significant impact if shipping times are not limited.
2. The report should clearly state that Jacobs brakes will not be used on site to manage speed when descending. Provisions should be made to suspend truck operators that use Jacob breaks on site.
3. The ambient sound levels calculated in STAMSON are used to justify the use of Class 2 sound level criteria for the receptors surrounding the quarry. Detailed tables of the ambient sound levels should be provided to justify the surrounding area designation as Class 2.
4. The background sound levels could not be measured in the field as the current sound levels produced by the quarry are significant enough that it would dominate the ambient sound levels. No further field observations were conducted nor were any monitoring data provided.

The report indicates that the site operations are not meeting the current MECP sound guidelines. The site noise may be louder than the ambient, which puts the existing operations out of compliance with the current guidelines.

5. The report states that the parts of the quarry and asphalt plant (shipping material in and out) will operate at night. 2nd Line east of Highway 6 is shown as having 0 to 2 trucks per hour during the early morning periods. This will create a Class 3 environment at Receptors R4 to R8 and drop the minimum exclusion limit to 40 dBA. This will result in the sound levels from the Nelson Quarry being above the guideline limits at Receptors R4 to R7 and other receptors along the haul route. With no additional mitigation recommended, nighttime operation involving shipping is questionable.
6. Broadband backup beepers (hiss) should be used as an alternative to the tonal beepers currently being used. They are noticeably quieter than the standard beepers when heard indoors and cost ~\$200 or so to equip each construction vehicle. Not every vehicle will be captive to the operation, so a complete changeover will take some time. They have been used successfully on the Toronto Eglinton LRT construction project.
7. A quiet drill with a sound power of 109 dBA has been used in the analysis and has been assumed to operate at all areas on the quarry. This will require the use of a special drill such as the Atlas Copco ROC D9C silenced hydraulic, down-the-hole drill and should be noted clearly in the report. Standard drills typically have a sound power of 115 to 120 dBA. The site plan condition should state that the quiet drill, which is about 8 dB quieter than an average drill, be used on site everywhere.
8. The noise reports discuss briefly the MECP notion of predictable worst case for the analysis. This would be the case when the weather is calm (minimum leaf noise), often at night and during a local temperature inversion. The combination of light winds in the evening or early morning often results in the worst-case scenario. It is often the result of idling trucks lining up at the gate of a quarry awaiting opening.
9. *NPC-233*, one of the report's references, states in Section 8-4 that the sound level analysis should include mapping of the existing level of road traffic in the vicinity of the proposed site and the increase in such traffic due to the plant's operation, projected for at least 10 years into the future. The truck routes to/from the quarry have not been considered as it is assumed that truck traffic from the extension will replace the current truck traffic and will therefore not cause an increase in sound levels. However, residences along the haul route may have been under the impression that the existing quarry was nearing exhaustion and the sound levels from truck traffic would be reduced once the material in the existing quarry was exhausted.
10. Ambient sound levels were calculated in STAMSON version 5.04 using traffic data of the surrounding roadways. The ambient sound levels could not be measured as the existing quarry operates throughout the year. Calculated sound levels when the quarry extensions are in operation were within the applicable MECP noise criteria at all receptors. Once either quarry extension is operational, a noise monitoring program should be implemented to corroborate the predicted sound levels at the receptors selected in the report. A monitoring program for the predictable worst-case scenario should be prepared ahead of time and should account for wind direction. The monitoring should be conducted when the quarry is operating at full capacity. A similar monitoring program should be implemented once the other extension is operational.

11. The noise report states there is no vibration on site. This is a very unlikely during the blasting phase of work. During blasting in close proximity to the residences, we would expect to feel vibration. It may fall within the MECP draft vibration guideline and, as such, not be a concern, but it is very likely that some of the neighbours will sense the pulses in the ground.
12. We noted that in the noise model, the quarry is modelled as an intermediate surface for ground absorption. Our experience includes pits and quarries whose bases, when covered in fine dust particles and water, act hard acoustically.

Conclusions

The major change that has been requested by Nelson is to increase the quantity of the area to be licensed, to allow for surges in material flow. Up to twice the material is being requested as stated in the documents of the applicant. Without measures to reduce the noise of the truck routes and the noise of the equipment, there will be impacts as a result of the condensed work load and added noise from the Asphalt Plant. Adding the licenses of the south and west extension and increasing the asphalt plant work load and nighttime shipping operations shipping have the makings of doubling the noise sources. MECP calls for evaluation for the "predictable worst case scenario" and these conditions could potentially be worse by 3 to 4 times than the existing conditions. Mitigation measures are going to be needed to control the excess noise. The evaluation for noise from the truck routes has been forwarded to the Region's Traffic consultant.

We trust the above will assist in your review of this project. Should there be any questions, please do not hesitate to contact the undersigned.

Yours truly,

J.E. COULTER ASSOCIATES LIMITED

John E. Coulter, B.A.Sc. P.Eng.

Brendon Colaco, B.A.Sc.

JEC:BC:pt

Enclosure

APPENDIX A

Site Plan



ACOUSTICS



NOISE



VIBRATION

A. General

- 1. Area Calculations
a. Lot Area: 10.0 Ha
b. Total Area: 10.0 Ha
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K. Planting

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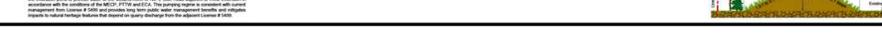
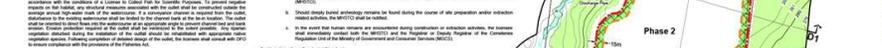
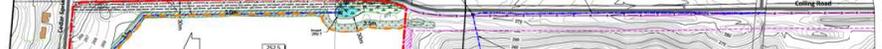
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Legal Description
Part Lot 1 & 2, Concession 2 and Part Lot 17 & 18, Concession 2 NDS
(Former Geographic Township of Nelson)
City of Burlington
Region of Halton

- LEGEND
Limit of Excavation
Licence Boundary
Contours with Elevation
Public Road
Fence
Jefferson Salamander Regulatory Boundary
Water Feature
Significant Woodlands
Woodlands
Wooded Feature
Wetland
Wetland
Forested Setbacks
120m Offset From Licence Boundary
Existing Licence
Parcel Fabric
Diversion or Discharge Pipe
Discharge Location
Sun-Canadian Pipe Line
Insurance / Exit
Gate
General Direction of Excavation & Boundary
Berm - Acoustic
Berm - Hydrologic
Berm - Visual
Building/Structure
Quarry Floor
Cross Sections



- 1. The Tree Protection Zone (TPZ) is established around the height of the matured drip line
2. The TPZ is established around the height of the matured drip line
3. The TPZ is established around the height of the matured drip line



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MHBC logo and name: PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE

DRAFT

Applicant: NELSON AGGREGATE CO.

Project: Burlington Quarry Extension

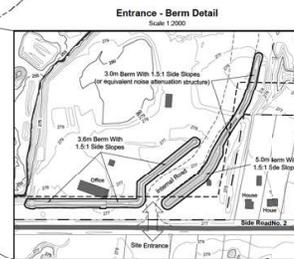
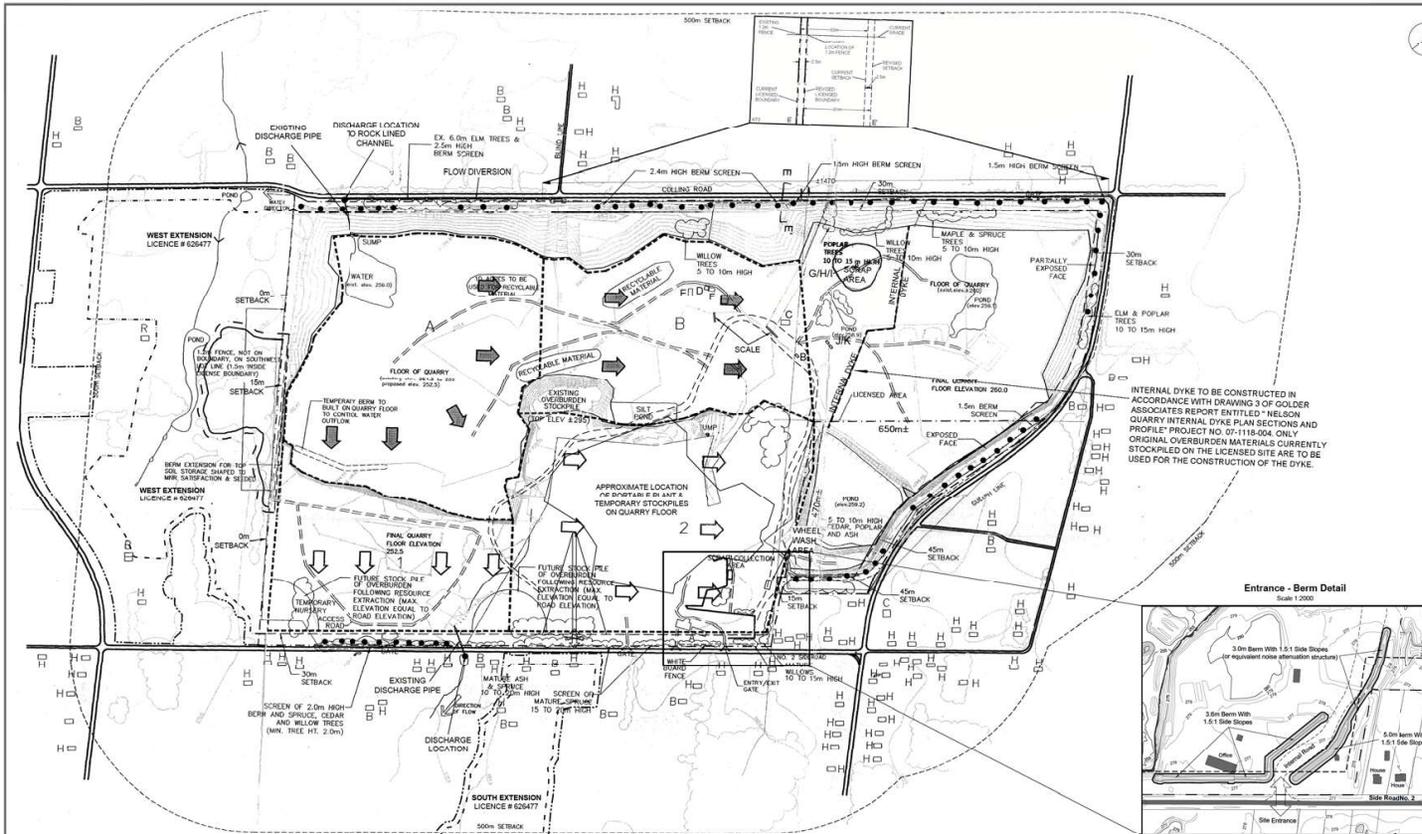
MNF Reference No.: 626477

File approval info: Date: April 2023

File No.: 9135D

File Name: Operational Plan

Drawing No.: 2 of 4



SITE DESCRIPTION AND STATISTICS
 PT. LOTS 1 & 2, CONC. 2 & 3
 CITY OF BURLINGTON
 REGIONAL MUNICIPALITY OF HALTON

LICENCE NO. 5499	LICENSED AREA (ha)
LICENCE NO. 5657	202.1
TOTAL	218.3
TOTAL AREA TO BE EXTRACTED (both licences)	211 ha

BUILDINGS WITHIN QUARRY BOUNDARY

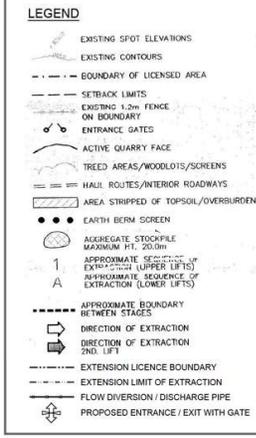
A	OFFICE	40mX15mX5m
B	PORTABLE SCALE HOUSE	15mX7m
C	FUEL PUMPS	30mX15mX4m
D	LUNCH ROOM	5mX5mX5m
E	ASPHALT PLANT	120mX30mX15m
F	ASPHALT CONTROL ROOM	20mX15mX5m
G	STORAGE SHED #1	5mX10mX3m
H	STORAGE SHED #2	4mX5mX3m
I	STORAGE SHED #3	7mX5mX3m
J	PORTABLE OFFICE TRAILER	10mX5mX3m
K	PORTABLE OFFICE TRAILER	10mX5mX3m

LEGEND OF BUILDINGS WITHIN 500m OF QUARRY BOUNDARY

B	HOUSE
H	BARN
C	COMMERCIAL BUILDING (i.e. GAS BAR)
R	RECREATION BUILDING (i.e. GOLF CLUBHOUSE)

Site Plan Amendments

No.	Date	Description	By
12	2/19/03	UPDATE NUMBERING FOR CONTROL AND OPERATION STANDARDS	J.P.
13	12/16/03	REVISION OF EXISTING QUARRY EXTENSION #1 (E0477)	J.P.
14	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #2 (E0477)	J.P.
15	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #3 (E0477)	J.P.
16	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #4 (E0477)	J.P.
17	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #5 (E0477)	J.P.
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89	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #77 (E0477)	J.P.
90	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #78 (E0477)	J.P.
91	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #79 (E0477)	J.P.
92	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #80 (E0477)	J.P.
93	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #81 (E0477)	J.P.
94	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #82 (E0477)	J.P.
95	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #83 (E0477)	J.P.
96	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #84 (E0477)	J.P.
97	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #85 (E0477)	J.P.
98	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #86 (E0477)	J.P.
99	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #87 (E0477)	J.P.
100	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #88 (E0477)	J.P.
101	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #89 (E0477)	J.P.
102	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #90 (E0477)	J.P.
103	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #91 (E0477)	J.P.
104	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #92 (E0477)	J.P.
105	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #93 (E0477)	J.P.
106	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #94 (E0477)	J.P.
107	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #95 (E0477)	J.P.
108	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #96 (E0477)	J.P.
109	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #97 (E0477)	J.P.
110	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #98 (E0477)	J.P.
111	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #99 (E0477)	J.P.
112	05/07/04	REVISION OF EXISTING QUARRY EXTENSION #100 (E0477)	J.P.



General Notes

Stockpiling Areas

- This site plan specifies the additional storage size (10 acres) for recyclable materials.
- This site plan specifies that the storage only includes asphalt and concrete for the purpose of aggregate recycling for this to be considered accessory to the aggregate operation. The materials should be restricted to aggregate based materials.
- This site plan specifies that this use only continues so long as the site is licensed.

Aggregate Extraction

- This plan depicts an operation plan for this property based upon the best information available at the time of preparation. Phases are schematic and may vary slightly with demand. Phases do not represent any specific or final time period. Any major deviations from the operational sequence will require approval of the MRC.
- Topsoil and overburden will be removed approximately 100 to 200 metres in advance of aggregate extraction.
- Phase 1 will be excavated in a single lift of (0.25m) down to the shale layer. A lift may be advanced southward in the course of Phase 1. Extraction will occur simultaneously from the east, west and south side within the site and from the south side on either side of the east opening.
- Phase 2 will be extracted in an easterly direction in a single lift (0.25m) down to the shale layer.
- As required, the existing processing plant will be removed and a new portable plant will be established on the quarry floor (as shown).
- A section lift (v. 5m) in areas A and B will be extracted down to the shale layer. Extraction may begin in the northwest corner of the quarry floor and proceed simultaneously north and eastward. This lift will be undertaken at the same time as phases 1 and 2.
- This Plan permits aggregate extracted at the Burlington Quarry Extension to be transported on site for processing and piling. The Burlington Quarry South Extension will transport aggregate from an aggregate conveyor on No. 2 Subarea in the location shown on this Plan. The Burlington Quarry West Extension will transport aggregate on the quarry floor within the extraction area connecting the two sites. The haul area to be extracted on site is the southeast corner of Licence No. 5499 after the completion of extraction of the Burlington Quarry Extension.
- Final storage berms will be installed and maintained in accordance with the Liquid Fuels Handling Code under the Technical Standards and Safety Act.

On-site Operations

- Existing equipment includes:
 - Portable crushing plant
 - Mobile crushers
 - Loaders
 - Mobile aggregate
 - And general equipment required to extract and ship aggregate.
- The processing of extracted materials shall occur between 7:00 and 19:00 only.

- The loading and shipping of products may occur 24 hours.
- The asphalt plant may operate 24 hours.
- No idling or extraction activities will occur within the quarry simultaneously with extraction activities within the Burlington Quarry Extension.
- The maximum sound power level of equipment operated within the quarry will be as follows:

Source	Sound Power Level (dBA re 10 ⁻¹² Watts)
Front-end Loader (Processing Area)	101
Crane/Crawler	117
Conveyor	123
Screen Plant	123
Power Generator	129
Trucking Road Truck	114
Mining Highway Truck	101

- Use of level load trucks will be used to transport material from the Burlington Quarry Extension for the processing area, with a posted speed limit of 35 km/hr along this route.
- Use of 30 highway trucks can arrive and depart the site per hour, travelling between the No. 2 Side Road access and the processing area, with a posted speed limit of 20 km/hr along this route.
- The asphalt plant will be equipped with noise control measures and operation within the conditions stipulated in the ECA study by the MRC.
- Equipment used for site preparation and rehabilitation shall satisfy the noise emission levels of the MRC's guideline NP-115, "Noise Construction Equipment".
- Existing perimeter berms along the north, east and south property lines shall be retained and a new semi-permeable barrier shall be constructed at the eastward end in the southeast corner of the site. See item detail on this page.

Overburden and Topsoil

The existing berms features along the north, east, and south property lines, including perimeter berms, will be maintained. Overburden and topsoil will be striped prior to extraction and will be used for backfilling of selected sites after the rehabilitation measures outlined on this No. 3 - Progressive and Final Rehabilitation Plans. Overburden stockpiles along No. 2 subarea shall not be any higher than the existing ground profile.

Water Discharge

Water discharge points are to remain as shown on this No. 1 and may also include the flow diversion in the northwest corner of this Plan. Diversion will occur to maintain a dry quarry floor while the quarry is in operation. The northwest discharge is to a rock lined ditch adjacent to Collins Road where a drain watershed and to the southeast if the flow diversion is installed. The south discharge is to a ditch which crosses No. 1 Subarea and proceeds southwest. Discharge of water will be in accordance with permits issued by the MRC.

Tree Planting

Tree planting and seeding of backfilled slopes will be conducted progressively as described in note 26 on this No. 3 - Progressive and Final Rehabilitation Plans. Should any tree planting or seeding that is to be established, replacement of trees or seeding will be conducted and maintained to ensure proper success rates.

Excavation

The licensed area is enclosed by a 1.2m fence with the exception of the area around the office and main site access areas which have a 3m tall wooden fence. No fencing is required adjacent to the Burlington Quarry West Extension.

Aggregate Stockpiles

Existing aggregate stockpiles will remain in the locations as shown on this plan during the extraction of areas 1, 4 and 8. These stockpiles will be removed as required on the operation within the three phases. The proposed stockpiles associated with the portable processing plant will be located on the quarry floor within the processing area (as shown on this plan).

Temporary aggregate stockpiles may be located on the quarry floor as required.

Construction

Interior access to quarry area and temporary area can be removed as required.

Variations from Control and Operation Standards

Section & 1.3 Standard	Variation	Rationale
(3)(a)	The west fence boundary will not be located as shown on this plan.	The west fence boundary shall be located as shown on this plan and shall be maintained as required.
(1)(a) & (1)(f)	Gates will not be required where haul roads cross the common boundary with the West Extension (Licence # 52477).	This will ensure compliance with the movement of equipment between berms and across additional lands owned by the same licensee.
(1)(d)	A fence barrier will be provided where the fence boundary abuts the West Extension (Licence # 52477).	This will ensure compliance with the movement of equipment between berms and across additional lands owned by the same licensee.
(1)(g) & (1)(h)	Excavation within the offset will occur to construct a road and an access point for the South Extension.	Excavation within the offset will occur to construct a road and an access point for the South Extension.
(1)(1)	Topsoil and overburden may be temporarily located within 30m of the West Extension (Licence # 52477).	The adjacent Licence # 52477 is owned by the same licensee.
(1)(1) & (1)(18)	Topsoil and overburden may be transferred between this berms and the West and East Extensions (Licence # 52477).	This will allow topsoil material from site preparation and rehabilitation in other parts of the quarry to be used for rehabilitation.
(1)(18)	Portions of the quarry floor shall remain vegetated.	Vertical berms above and below the final level will create a more diverse habitat and visually appealing rehabilitated terrain.

Information Compiled From

- 1996 Aerial Photography at 1:5000 Scale
- 1998 Official Plan for the Halton Planning Area, Region of Halton
- 1992 Nappin's Excavation Plan
- Ministry of Environment, Water and Forestry
- 1991 Resource Field Notes
- Ontario Base Mapping (Air Photography 1952, Publisher 1983)
- 1995 Plans by Nelson
- 1997 Mark Lines Provided by Nelson

Rehabilitation contours within the City of Burlington's Open Data Catalogue which contains 2017 contour data and are displayed in one metre intervals.

Elevations shown are in metres above sea level (msl).

On-site haul roads, stockpile locations, buildings and structures were updated based on July, 2020 aerial photography.

ORIGINAL SITE PLAN PREPARED BY:

REINDERS (Professional Engineer, Ontario License # 10000)

REINDERS CONSULTANTS LIMITED (Professional Engineer, Ontario License # 10000)

DATE: MAR 05/09 **PROJECT NO.:** 4792 **DRAWN BY:** C.G./S.B. **CHECKED:** T.M.J.

PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE

MHC PLANNING DRAFTED SITE PLAN AMENDMENTS NO. 6 TO 112

Burlington Quarry
 (former location of Helcon) City of Burlington, Region of Halton

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OPERATIONAL PLAN
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