Proposed Burlington Quarry Expansion
JART COMMENT SUMMARY TABLE – Transportation

Please accept the following as feedback from the Burlington Quarry Joint Agency Review Team (JART). Fully addressing each comment below will help expedite the potential for resolutions of the consolidated JART objections and individual agency objections. **Additional, new comments may be provided once a response has been prepared to the comments raised below and additional information provided**.

	JART Comments (February 2021)	Reference	Source of Comment	Applicant Response (June 2021)	JART Response December 2021	Applicant Response (June 2022)
Report/Date: Transportation / Haul Route Study, February 2020				**Author: Paradigm Transportation Solutions Limited**		
1.	In addition to the provided comments, the Transportation Planning Department provided the following background studies, with corresponding links, for the TIS to consider in its growth rate assumptions and overall background traffic characterization: • Dundas Corridor Study - Brant St to Bronte Rd - MCEA Study: (2015) https://www.halton.ca/For-Residents/Roads-Construction/Municipal-Class-Environmental-Assessment-Studies/Dundas-Corridor-Study-Brant-St-to-Bronte-Rd-(1) • Hamilton - Waterdown/Aldershot Transportation Master Plan – East-West Corridor Study – (2012) https://www.hamilton.ca/city-planning/master-plans-class-eas/waterdownaldershot-transportation-master-plan	General	Halton Region	The growth rates used in the Dundas Corridor Study and the Hamilton - Waterdown/Aldershot Transportation Master Plan are consistent with the growth rate used in the February 2020 traffic report prepared for the proposed Burlington Quarry Extension. The generalized background traffic growth assumes an annual growth rate of 2% per annum. This growth rate is considered conservative (i.e., high) for the study area. In general terms, peak hour traffic growth is driven by urban development trends and in this area, the new urban development for the next few years is the Waterdown urban expansion, urban Burlington intensification and north Oakville urban expansion. These urban development trends would indicate that traffic growth is most likely to increase in the eastbound and westbound directions along Dundas Street with limited growth along the north/south arterial roadways of Guelph Line and Cedar Springs Road, south of Dundas Street.	2% per annum is considered conservative and is acceptable	Addressed. No Action
2.	Perform safety analysis for the future crossing of No. 2 Side Road. This is where the access to the proposed southern expansion will align with the existing access and large trucks will be crossing city road.	General	City of Burlington	**True North Safety (TNS)** has prepared a safety analysis for the crossing of No. 2 Sideroad. This report has been provided to JART under separate cover.	The study is related to No. 2 Sideroad and there are no additional comments as the safety issues have been addressed as part of the safety review.	Addressed. No Action
3.	Provide information that the applicant's traffic consultant used to come up with the traffic generated by the quarry. It is needed to confirm the number of vehicles, where these vehicles are coming from and travelling to.	General	City of Burlington	**Appendix A** in the February 2020 Traffic Study contains confidential data provided by Nelson Aggregate Co. This data was provided to the JART peer reviewer (CIMA Canada Inc.) in November 2020 subject to a Non Disclosure Agreement (NDA) with Nelson Aggregate Co. We understand the City of Burlington is relying upon the peer reviewer to conduct the review on behalf of the City of Burlington.	Confirmed that the numbers provided correspond with the information in the report.	Addressed. No Action
4.	With regard to deemed right of way widths and widening requirements, under the current official plan, the following information is provided, please be advised however that through the application process, through review of the traffic studies, etc., by vested departments/agencies, it may be necessary for additional lands to be dedicated for additional lanes, turning lanes, daylight and visibility triangles etc., Site Engineering defers to the expertise of the City's Transportation department and the Region's Transportation department to confirm requirements.	General	City of Burlington	See MHBC cover letter for response to Comments #4-#14	The deemed rights-of-way should be shown on the site plan with the right of ways clear of quarry operations and facilities.	The existing and future rights-of-way are clear of quarry operations and facilities. The ARA Site Plans, attached as **Tab 1**, identify the existing right of ways. The Region and City have no authority to take land for the future right-of-ways as part of the proposed application to permit the proposed Burlington Quarry Extension since Site Plan Approval or Plan of Subdivision approval from the City and Region is not required.
5.	No. 2 side Road is a City of Burlington owned road, the deemed right of way is 30.0 metres, the actual width varies from +/- 20.0 metres to 25.0 metres. In order to meet the deemed width a variable widening of up to +/- 5.0 metres would be required. The widening would be dedicated (free of charge and all legal and survey costs would be the responsibility of the applicant) through the planning application process. Only an Ontario Land Surveyor (OLS) would be able to accurately determine the actual dimensions and prepare a drawing which accurately shows the deemed right of way/widening.	General	City of Burlington	Refer to Comment Response #4.	Refer to JART Comment Response #4.	Refer to Comment Response #4.
6.	Colling Road is a City of Burlington owned road, the deemed right of way is 20.0 metres, the actual width meets deemed, no widening required.	General	City of Burlington	Refer to Comment Response #4.	Refer to JART Comment Response #4.	Refer to Comment Response #4.
7.	Cedar Springs Road is a City of Burlington owned road, the deemed right of way is 30.0 metres, the actual width varies from +/- 20.0 metres to 30.0 metres. In order to meet the deemed width a variable widening of up to +/- 5.0 metres would be required. The widening would be dedicated (free of charge and all legal and survey costs would be the responsibility of the applicant) through the planning application process. Only an Ontario Land Surveyor (OLS) would be able to accurately determine the actual dimensions and prepare a drawing which accurately shows the deemed right of way/widening.	General	City of Burlington	Refer to Comment Response #4.	Refer to JART Comment Response #4.	Refer to Comment Response #4.
8.	Guelph Line is a Region of Halton owned road, please contact the Region for deemed width and any widening and daylight triangle requirements.	General	City of Burlington	Refer to Comment Response #4.	Refer to JART Comment Response #4.	Refer to Comment Response #4.

9.	Official Plan/Transportation Master Plan Right-of-Way Requirements: Any lands within 17.5 metres (57.4 feet) of the centre line of the original right-of-way of Guelph Line (Regional Road 1) that are part of the subject property shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements.	General	Halton Region	Refer to Comment Response #4.	Refer to JART Comment Response #4.	Refer to Comment Response #4.
10	Municipal Class Environmental Assessment Study/Environmental Study Report (Transportation Planning) Right-of-Way Requirements Guelph Line (Regional Road 1): Any additional lands that are part of the subject property and have been identified as required for the future widening of Guelph Line (Regional Road 1), as identified in a future Municipal Class Environmental Assessment Study/Environmental Study Report, shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements. Currently, a Municipal Class Environmental Assessment has not been completed.	General	Halton Region	Refer to Comment Response #4.	Refer to JART Comment Response #4.	Refer to Comment Response #4.
11	Detail Design Project (Engineering & Construction) Right-of-Way Requirements - Guelph Line (Regional Road 1): Any additional lands that are part of the subject property and have been identified as required for the future widening of Guelph Line (Regional Road 1), as identified in a future Detailed Design Project, shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements. Currently, a Detail Design has not been completed.	General	Halton Region	Refer to Comment Response #4.	Refer to JART Comment Response #4.	Refer to Comment Response #4.
12	A daylight triangle measuring 15.0 metres along Guelph Line (Regional Road 1) and 15.0 metres along Colling Road shall be dedicated to the Regional Municipality of Halton for the purpose of road right-of-way widening and future road improvements.	General	Halton Region	Refer to Comment Response #4.	Refer to JART Comment Response #4.	Refer to Comment Response #4.
13	All lands to be dedicated to Halton Region shall be dedicated with clear title (free and clear of encumbrances) and a Certificate of title shall be provided, in a form satisfactory to the Director of Legal Services or his/her designate.	General	Halton Region	Refer to Comment Response #4.	Refer to JART Comment Response #4.	Refer to Comment Response #4.
14	Please provide a draft reference plan detailing all of the proposed widening (and daylight triangle) dedications. The quarry lands (both the expansion and existing quarry) north of No. 2 Side Road, are, or will be one property, therefore the widening dedications would be taken on both the expansion and existing quarry lands, as well as for the frontage of the south expansion lands.	General	City of Burlington	Refer to Comment Response #4.	Refer to JART Comment Response #4.	Refer to Comment Response #4.
15.	Mitigation Measures – Future Operational Analysis Various movements at intersections within the study area were identified as operating at or above capacity during Total Traffic Conditions. The report does not specifically identify how critical movements operating over capacity attributable to the proposed development can be improved. For example, eastbound and northbound through movements during the AM peak hour at Guelph Line and Dundas Street, are expected to operate above capacity. The eastbound through movement is expected to be addressed by the Dundas Street road widening outlined in the Region's Transportation Master Plan (TMP). However, no specific improvements are recommended for northbound movements on Guelph Line by the report or the Region's TMP. Further information is required regarding proposed improvements for alleviating movements that are expected to operate at or above capacity attributable to the traffic generated by the proposed development.	General	CIMA Canada Inc.	The following critical movements, per the Halton Region TIS guidelines, are forecast to occur under Total Traffic conditions. Dundas Street and Guelph Line • Eastbound left-turn (capacity issue) • Eastbound through (capacity issue) • Westbound left-turn (capacity & queueing issue) • Westbound through (capacity issue) • Northbound left-turn (capacity & queueing issue) • Northbound through (capacity issue) Dundas Street & Cedar Springs Road/Brant Street • Eastbound through (capacity issue) • Westbound left-turn (capacity & queueing issue) • Northbound left-turn (capacity & queueing issue) Guelph Line and 2 Side Road • Eastbound Left-Turn Lane (capacity issue) • Westbound approach (capacity issue) Site generated traffic is not creating any new critical movements at the above noted intersections. Site generated traffic is expected to contribute volumes to only the following critical movements: Dundas Street and Guelph Line • Eastbound left-turn – AM peak hour = 4 PCE, PM = zero • Northbound through – AM peak hour = 7 PCE, PM = zero Dundas Street & Cedar Springs Road/Brant Street • Eastbound through – AM peak hour = 4 PCE, PM = zero Guelph Line and 2 Side Road • Eastbound Left-Turn Lane – AM peak hour = 21 PCE, PM = 4. Of the four critical movements identified as being a concern under the total traffic horizon where site traffic contributes volumes, the following movements are also considered critical under the background traffic horizon (i.e. no site traffic): Dundas Street and Guelph Line • Eastbound left-turn – (capacity issue) • Northbound through – (capacity issue) Dundas Street & Cedar Springs Road/Brant Street	**Partially Addressed** The effects of the site traffic on the identified future total critical movements are minimal. However, as per the Halton Region Transportation Impact Study Guidelines, when the operations of Regional intersection movements exceed acceptable levels, the TIS is required to investigate how to mitigate the impact of the Proposed Development. The report should identify all movements requiring mitigation measures, even if not as a direct result of the proposed development. A section is required in the revised Transportation Impact Study which provides a summary of the recommendations in accordance with Halton Region Guidelines.	As noted the effects of site traffic to critical movements are minimal and are a result of existing and planned traffic levels. Although these mitigation measures are not a requirement for Nelson to implement, as requested Paradigm will provide an addendum letter outlining potential remedial measures that could be considered by the road authorities. Timing for the addendum letter is approximately 4-5 weeks.

				• Eastbound through – (capacity issue) Guelph Line and 2 Side Road • Eastbound Left-Turn Lane (capacity issue) Site traffic related to a 2.0 million tonnes per annum extraction limit has negligible impact on traffic operations. Of the four critical movements identified to occur under total traffic operations, site traffic is expected to have very little impact on intersection operations beyond the 2 Side Road intersection with Guelph Line. **Table 1** below summaries the change in delay per vehicle, v/c ratio and queue length between total traffic operations and background traffic operations. The generalized increase in background traffic growth (2% per annum) is expected to have a greater impact on intersection operations than site traffic generated by the site. **TABLE 1: OPERATION SUMMARY – CRITICAL MOVEMENTS IMPACTED BY SITE TRAFFIC**		

Intersection/ Movement		Horizon Year	Intersection Operations								Change					
			AM Peak Hour				PM Peak Hour				AM Peak Hour			PM Peak Hour		
			LOS	Delay	v/c	Q	LOS	Delay	v/c	Q	Delay	v/c	Q	Delay	v/c	Q
Dundas Street & Guelph Line	EBL	Existing	C	25	0.44	51	F	125	0.89	41						
		Background	C	28	0.53	60	F	176	1.02	47	3	0.09	9	51	0.13	6
		Total	C	28	0.54	62	F	176	1.02	47	0	0.01	2	0	0.00	0
	NBT	Existing	B	14	0.31	58	C	27	0.88	289						
		Background	F	182	1.32	208	E	62	0.84	115	168	1.01	150	35	-0.04	-174
		Total	F	187	1.32	210	E	62	0.84	115	5	0.00	2	0	0.00	0
Dundas Street & Brant Street	EBT	Existing	C	33	0.94	195	C	25	0.41	63						
		Background	E	57	1.04	288	C	26	0.44	70	24	0.10	93	1	0.03	7
		Total	E	58	1.04	229	C	25	0.24	10	1	0.00	-59	-1	-0.20	-60
Guelph Line & 2 Side Road	EBL	Existing	D	29	0.53	24	F	53	0.57	24						
		Background	E	41	0.70	40	F	93	0.80	38	12	0.17	16	40	0.23	14
		Total	F	121	1.08	94	F	100	0.83	41	80	0.38	54	7	0.03	3

16	Mitigation Measures – Queue Lengths Some of the 95th percentile queues reported are expected to exceed the available storage length (e.g., 2024 PM peak hour northbound and westbound left turning movements at Guelph Line & Dundas Street are expected to exceed available storage by 106.0 and 214.0 metres, respectively). The eastbound through movement is expected to be addressed by the Dundas Street road widening outlined in the Region's Transportation Master Plan (TMP) as previously mentioned; however, no mitigation measures are recommended to address the excessive northbound left queues. Assess and provide mitigation measure to address the excessive 95th percentile queues that are expected to exceed available storage at Guelph Line & Dundas Street.	General	CIMA Canada Inc.	The following queue lengths are forecast to exceed the available existing storage at the signalized intersection of Dundas Street and Guelph Line under total traffic conditions. • Westbound left-turn • Northbound left-turn Site generated traffic is not expected to contribute volumes to these two movements. Both turning movements are identified as critical movements under existing conditions and are expected to remain critical with or without the approval of the quarry extension. It is anticipated that the storage requirements for the westbound left-turn movement from Dundas Street to Guelph Line will be addressed by the Dundas Street road widening outlined in the Region's Transportation Master Plan (TMP). The existing storage lane length for this movement is approximately 115 m. The forecast queue length is approximately 400 m. The forecast volume for this movement is approximately 715 PCE during the PM peak hour. The forecast volume suggests the need for dual westbound left-turn lanes. The existing storage lane length for the northbound left-turn lane is 50 m. Guelph Line between Dundas Street and Driftwood Drive/Coventry Way is currently designed as a 5 lane cross-section with a painted centre median measuring approximately 5 m in width. The Carncastle Gate intersection with Guelph Line operates as a right-in/right-out connection with left-turns restricted by a raised centre median. There are no private driveways or intersections along Guelph Line between Dundas Street and Driftwood Drive/Coventry Way. This would allow the road authority to repaint the existing center median to provide additional storage for the northbound left-turn movement. The analysis contained in the February 2020 report suggests a storage lane length of approximately 190 m is needed for this movement. The additional storage can be accommodated by repainting the existing center median to provide the additional storage. **Table 2** below summarizes the operational conditions for the Dundas Street and Guelph Line intersection under total traffic conditions with the implementation of a dual westbound left-turn lane with 115 m of storage (existing storage) and northbound left-turn lane with 190 m of storage. The additional storage for the northbound left-turn lane and dual westbound left-turn lanes would address the forecast queueing issues expected to occur under the five-year horizon (year 2024). Site generated traffic is not expected to contribute volumes to these two movements. **TABLE 2: TOTAL TRAFFIC OPERATIONS – WITH REMEDIAL MEASURES (DUNDAS STREET & GUELPH LINE)**	**Addressed** The following mitigation measures are provided at Guelph Line & Dundas Street to address the forecasted queuing issues: • Dual westbound left-turn lanes; and • Extending the northbound left-turn lane storage lane capacity to 190 metres. Table 2 outlines the 2024 total traffic operations with the proposed mitigation measures.	**Addressed. No Action**

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																OVERALL
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Guelph Line & Dundas Street	TCS	LOS	C	F	C	F	E	B	>	C	D	F	>	F	D	D	D	D	F
			Delay	28	118	23	100	79	14	>	31	37	202	>	184	46	48	43	47	99
			V/C	0.54	1.16	0.31		0.83	0.35	>		0.39	1.38	>		0.69	0.45	0.05		1.10
			95th	62	402	53		63	67	>		43	218	>		54	64	5		
			Storage	100	-	70		115	-	>		190	-	>		70	-	70		
			Avail.	38	-	17		52	-	>		147	-	>		16	-	65		
PM Peak Hour	Guelph Line & Dundas Street	TCS	LOS	F	C	C	D	C	D	>	D	F	E	>	F	D	E	D	D	D
			Delay	171	34	27	39	23	42	>	37	168	62	>	96	44	58	49	53	50
			V/C	1.02	0.58	0.14		0.77	0.98	>		1.22	0.84	>		0.62	0.77	0.37		1.00
			95th	50	134	24		75	380	>		156	115	>		48	98	50		
			Storage	100	-	70		115	-	>		190	-	>		70	-	70		
			Avail.	50	-	46		40	-	>		34	-	>		23	-	21		

MOE - Measure of Effectiveness *V/C - Volume to Capacity Ratio* *> - Shared Right-Turn Lane*
TCS - Traffic Control Signal *95th - 95th Percentile Queue Length* *< - Shared Left-Turn Lane*
TWSC - Two-Way Stop Control *LOS - Level of Service*

17	Safety Analysis It is suggested for the terms of reference that a 'Safety Analysis' section will be included in the report to discuss potential safety or operational issues (per Region's TIS Guidelines, Section 3.6.2) in the study area. Even if there are no safety issues, a review should be completed and documented in the TIS report. Include a Safety Analysis section in the report to discuss potential safety or operational issues.	General	CIMA Canada Inc.	True North Safety prepared a safety analysis for No. 2 Sideroad which has been provided to JART under separate cover. Guelph Line is a Regional Road that has been designed to accommodate truck traffic and is the existing haul route and the only haul route available for the proposed Burlington Quarry Extension. Refer to Comment Response #18.	**Addressed** A Safety Analysis Report is provided by the True North Safety Group.	**Addressed. No action**
18	Haul Route Study Although the Report states that there are no changes to the proposed haul route and no new impacts to the road network are anticipated, the Report does not mention the preparation of a Haul Route Study. It should be noted that the request for a Haul Route Study was identified by the Region's report LPS08-20 – Proposed Expansion to the Burlington Quarry (Nelson), Pre-Consultation Meeting. Complete a Haul Route Study following the requirements identified by the Region's Aggregate Resources Reference Manual for the preparation of a Transportation/Haul Route Study.	General	CIMA Canada Inc.	The Burlington Quarry has been producing aggregate since 1953. The proposed quarry extensions will allow the Burlington Quarry to continue to produce aggregate at its existing location. The haul route used to ship material to market will remain unchanged. All material shipped to market, except local deliveries, will travel east to/from Guelph Line (Regional Road 1). The Regional Road network will support the movement of goods to market including the resources produced at the Burlington Quarry. All Regional roads are classified and designed to accommodate truck traffic[1]. All trucks hauling material to market are expected to follow and adhere to the existing, and future, truck route network. Local deliveries may require a deviation from identified truck routes. To the west of the subject site there is an existing truck prohibition which limits truck traffic on No 2 Sideroad. No changes to the truck prohibition are proposed. The existing prohibition was established by Council Resolution CC-83-05. The existing truck prohibition requires all quarry truck traffic to travel to/from Guelph Line. No other haul route options are available to the subject site. The site driveway for heavy vehicles is located approximately 350 metres from the Regional road network. The existing haul route provides the shortest most direct route to the Regional road network while limiting impacts to local roadways. The rock trucks shipping material across No 2 Sideroad from the South Extension lands will be contained to the driveway intersection. The South Extension driveway is located approximately 485 m west of Guelph Line. Rock trucks will not travel along No 2 Sideroad. Rock trucks will only cross No 2 Sideroad until the South Extension is exhausted.	**Addressed** The proposed extension does not change the existing haul routes. The February 2020 traffic report and PTSL's June 2021 response addressed the criteria outlined in the Transportation/Haul Route Study Objectives listed in the Section 4.9 of the Region's Aggregate Resource Reference Manual.	**Addressed. No action**
19	Travel Demand Figure 2.1 shows that the highest traffic volumes during the PM peak occurs between 2:00 PM and 3:00 PM. This is confirmed by the statement in Section 2.2.3 that says: "Shipping actively begins to taper off around 3PM". However, the TMCs provided in Appendix B for the driveway site show that the highest PM peak hour occurs between 4:30 and 5:30 PM. Please confirm and update the report as necessary to be consistent. Please update Sections 2.2.1 and 2.2.3 to a consistent PM peak hour with the TMCs. If the PM peak hour at the site is the same as the Guelph Line peak hour, no changes in the traffic analysis are necessary. However, if the PM peak hour at the site occurs between 2:00 and 3:00 PM, it is recommended to conduct an additional PM peak operational analysis.	Section 2.2.1, Section 2.2.3, Figure 2.1, and Appendix B	CIMA Canada Inc.	Although the site traffic tapers off around 3PM the AM and PM hour of the adjacent street was used to provide a conservative analysis of intersection capacity. At Guelph Line & No 2 Side Road the entering volume during the PM peak hour is 1,156 vehicles. During the 3:00 PM hour the entering volumes are 356 vehicles per hour lower at 800 vehicles per hour. **Table 3** below summarizes the two-way traffic volumes on Guelph Line at No 2 Side Road and the two-way volumes using the site driveway for the AM and PM count periods. High lighted cells indicate the peak hour for Guelph Line and the site driveway. The two-way volumes using both Guelph Line and the site driveway peak at the same time during the AM count period. During the PM count period, two-way volumes using the site driveway peak prior to Guelph Line. The peak hour for the network is the adjacent street PM peak hour. Off peak analysis is not expected to result in the identification of any new capacity issues vs. the findings of the February 2020 Traffic Report. **TABLE 3: TWO-WAY VOLUME SUMMARY** **Period** / **Time Ending** / **Guelph Line Two-Way** / **Driveway Two-Way** / **SUM** AM 08:00 781 79 860 08:15 839 84 923 08:30 **850** **88** **938** 08:45 846 80 926 09:00 821 83 904 PM 16:00 732 **41** 773 16:15 784 33 817 16:30 884 28 912 16:45 977 28 1,005 17:00 1,037 27 1,064 17:15 **1,090** 23 **1,113** 17:30 1,078 19 1,097 17:45 1,067 17 1,084 18:00 1,022 10 1,032	**Addressed** Comment indicates that the PM peak hour at Guelph Line & Number 2 Side Road was used (as shown in Section 2.2.1) and not the peak hour of the Site access.	**Addressed. No action**
20	Trip Generation In Section 2.2.3 the report provides details of heavy vehicle generation in recent years at the existing site. It is noted that the Nelson Quarry does not own or operate any trucks for the transportation of materials from the point of origin to the quarry or to an end use location; rather, it is the customer and their contractors, that transports material. Given the report examines the customers' truck fleet, outlines are given for typical truck sizes, trailer configurations and average net load per outgoing trip. However, to determine the estimated truck trips generated by the proposed site expansion, the proponent's consultant conducted a review of detailed shipping records from 2014 to 2018. The report indicates that records used for the review are confidential and only available upon request. The details provided in Section 2.2.3 of the report are satisfactory; however, a review of the detailed shipping records would be beneficial to provide more details on truck types and material loads to	Section 2.2.3 and Appendix A	CIMA Canada Inc.	**Appendix A** in the February 2020 Traffic Study contains confidential data provided by Nelson Aggregate Co. This data was provided to the JART peer reviewer (CIMA Canada Inc.) in November 2020 subject to a Non Disclosure Agreement (NDA) with Nelson Aggregate Co. We understand the Region of Halton is relying upon the peer reviewer to conduct the review on behalf of the Region of Halton.	**Addressed** Nelson Aggregate Company's quarry trucking details were provided for review in November 2020.	**Addressed. No action**

<table>
<tr><td></td><td>verify the typical truck sizes and load volumes to be expected as part of the Quarry's operations. As such, it is recommended that the Region should request the detailed shipping records from Appendix A.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>21</td><td>Trip Distribution
Future quarry activity estimates are based on the turning movement count done in October 2019 and factored to the maximum quarry production of 2.0 million tonnes per annum. The TMC data indicates 84 AM peak hour trips with 28 (98 passenger car equivalents (PCE)) two-way additional heavy vehicle trips and 15 PM peak hour trips with 1 (4 PCE) two-way additional heavy vehicle trip. No justification is provided for the number of estimated additional two-way trips.

Additionally, the trip distributions shown in Figures 4.2A and 4.2B require further explanation or adjustments. For example, Figures 4.2A indicates 28 additional inbound trips are making southbound right-turns from Guelph Line but there are only 21 outbound trips making an eastbound left-turn onto Guelph Line.

Please provide further justification for the number of additional trips estimated in Table 4.1. Additionally, update Figure 4.2A and 4.2B to reflect outbound trips returning on the same path as the inbound trips or provide justification for the different origin/destination points. Any changes to the future operations should be reflected in the future improvement scenario.</td><td>Table 4.1 and Figures 4.2A and 4.2B</td><td>CIMA Canada Inc.</td><td>Nelson does not own or operate any trucks for the shipping of material to market; rather, customers and their contractors transport the material from the quarry by truck.

The site's trip generation for 2 million tonnes has been estimated by prorating the existing extraction rate 1.5 million tonnes.

"the estimated total future truck levels shown in Table 4.1 of the subject TIS are appropriate estimates for the future peak hour truck volumes." - Refer to comment #23

As Nelson does not own or operate any of the trucks shipping material to market, vehicles may not return to the site on the same path. The estimated trip distribution pattern reflects existing travel patterns as documented under existing conditions. Table 4 below, summarizes the estimated trip distribution.

TABLE 4: ESTIMATED TRIP DISTRIBUTION
<table><tr><th rowspan="2">Origin/Destination</th><th colspan="2">AM Peak Hour</th><th colspan="2">PM Peak Hour</th></tr><tr><th>In</th><th>Out</th><th>In</th><th>Out</th></tr><tr><td>North via Guelph Line</td><td>60%</td><td>40%</td><td>60%</td><td>75%</td></tr><tr><td>South via Guelph Line</td><td>15%</td><td>30%</td><td>20%</td><td>15%</td></tr><tr><td>South via Brant Street</td><td>0%</td><td>5%</td><td>0%</td><td>0%</td></tr><tr><td>East via Dundas Street</td><td>20%</td><td>15%</td><td>20%</td><td>10%</td></tr><tr><td>West via Dundas Street</td><td>5%</td><td>10%</td><td>0%</td><td>0%</td></tr><tr><td>Total</td><td>100%</td><td>100%</td><td>100%</td><td>100%</td></tr></table>
No update to the site traffic assignment or the site trip generation for a 2.0 million tonne licence limit is recommended at this time.

The haul route used to ship material to market will remain unchanged from existing. All material shipped to market, except local deliveries, will travel east to/from Guelph Line (Regional Road 1). The Regional Road network will support the movement of goods to market including the resources produced at the Burlington Quarry. All Regional roads are classified and designed to accommodate truck traffic[2].</td><td>Addressed
Based on the review of the data provided in Appendix A, the estimated total future truck levels shown in Table 4.1 of the subject TIS are appropriate estimates for the future peak hour truck volumes.

The comments section provides justification for the trip distributions (shown in Figures 4.2A and 4.2B of the report) in Table 4: Estimated Trip Distribution.</td><td>Addressed. No action</td></tr>
<tr><td>22</td><td>Paradigm Methodology
Paradigm reviewed the detailed shipping records, provided in Appendix A, that contain shipping details from 2014 to 2018. Based on the shipping details, they estimated trucking levels for a 2.0 tonnes per annum scenario. This scenario includes three distinct types of truck trips entering and exiting the quarry. The first distinct type, which accounts for all the outbound trips, is aggregate material that is mined and processed in the quarry. The second and third distinct types, which are incoming trips to the quarry, are clean fill and recycling materials. Estimates of approximately 50.0% to 58.0% of the incoming trucks with clean fill and recycling material between 2014 and 2017 also left with a load of aggregate. In 2018, the proportion these incoming trucks leaving with aggregate increased by about 23.0%. The estimates were used to calculate the annual inbound and outbound truck trips from 2014 to 2018.

Additionally, estimates of the future increase to truck volumes were calculated based on the details shipping records. The estimates were developed by adding the truck volumes from the October 2019 site driveway turning movement count to the volumes estimated from the average daily trucks served in 2018. The volumes from the TMC as well as the estimated volumes are shown in Table 4.1 of the TIS report.</td><td>Table 4.1 and Appendix A</td><td>CIMA Canada Inc.</td><td>Acknowledged.</td><td>Refer to JART Comment response #20.</td><td>Addressed. No action</td></tr>
<tr><td>23.</td><td>Peer Review Findings
Based on the review of the detailed data provided in Appendix A, CIMA verified that the estimated 50.0% of the clean fill and recycling trips that left with aggregate, was used to calculate annual inbound and outbound truck trips from 2014 to 2017, while 77.0% was used for 2018.

Based on the review of the detailed 2018 data provide in Appendix A, the estimated total future</td><td>Table 4.1 and Appendices A and B</td><td>CIMA Canada Inc.</td><td>Appendix B of the February 2020 TIS contains the existing turning movement counts. The TMC data provides a break down of vehicle classification.</td><td>Partially Addressed
Appendix B provides a detailed breakdown of vehicle types for the AM peak hour. However, it does not provide the breakdown of heavy vehicles for the PM peak hour.
Additionally, attachment 3 provides a breakdown of vehicle class for all study area</td><td>Tab 2 contains the detailed breakdown break down of TMC data collected at the existing site driveway.

Vehicles are classified as
Motorcycles
Cars & light goods
Buses</td></tr>
</table>

	truck levels shown in Table 4.1 of the subject TIS are appropriate estimates for the future peak hour truck volumes. From Table 4.1, the future estimated truck volume is 29, which is added to the existing TMC volumes. To verify the estimated volumes CIMA examined the 2018 month-by-month total (aggregate, clean fills and recycling trips) average daily trucks served in 2018. The total average daily trucks served averaged for the year was 31 trucks (rounded up). The value is fairly close to the 29 total trucks estimated by Paradigm. However, CIMA was unable to verify the distribution of the estimated 29 total trucks between the AM and PM peak hours. The subject TIS distributes 28 trucks (evenly distributed between inbound and outbound) to the AM peak hour and 1 outbound truck to the PM peak hour. Based on the TMC volumes shown in Table 4.1, 15.0% of the estimated 29 added trucks, or 4 trucks, should be allocated to the PM peak hour. The TMC provided in Appendix B, does not include a detailed breakdown of the vehicles in the PM peak hour. A detailed breakdown of the vehicle types entering and exiting the site, such as the one for the AM peak hour, is needed to verify the added truck volumes in PM peak hour of the subject TIS. In summary, the process used to estimate the added future truck volumes for both peak hours was verified; however, the distribution of the added truck volumes could not be verified. It is recommended that a detailed breakdown of PM peak hour TMC data be provided, similar to the data provided for the AM peak hour.				intersections except for at Gravel Pit & Number 2 Side Road intersection.	• Single-unit trucks • Articulated trucks • Bicycles on road • Bicycle on crosswalk • Pedestrians
24	Future Traffic Operations Tables 4.2 and 4.3 show future traffic operations at all study area intersections. Signalized and unsignalized intersections are together in the same table. Signalized and unsignalized intersections should not be in the same table as the level of service for a stop-controlled intersection differs from a signalized intersection. Please provide separate tables for signalized and unsignalized intersections for all traffic operational analyses.	Tables 4.2 and 4.3	CIMA Canada Inc.	Acknowledged. Separate tables are not required to summarize operational conditions. The tables contained in the February 2020 TIS reflects the different LOS thresholds for unsignalized and signalized intersections. **Attachment 1** contains the requested separate operational tables for ease of review.	**Addressed** Attachment 1 provides the separate tables for signalized and unsignalized intersections.	**Addressed. No action**
25	Mitigation Measures – Traffic Signal Warrant A traffic signal warrant analysis was undertaken for the intersection of Guelph Line & No. 2 Sideroad. The report mentions that the traffic signal was not warranted. However, the volumes used for the traffic signal warrant did not match those in Figures 4.3A/B (Total Traffic Conditions). It is recommended to review the volumes used for the traffic signal warrant and update the analysis as necessary.	Figures 4.3A and 4.3B	CIMA Canada Inc.	OTM warrants utilize total count volume forecast for the intersection with no PCE factor applied. **Attachment 2** contains supplementary OTM Warrant analysis with a PCE factor applied. Traffic control signals at the intersection of Guelph Line & No. 2 Sideroad are not warranted using OTM Book 12 Justification 7.	**Addressed** Attachment 2 provides a supplementary signal warrant analysis. The results indicate that signalization is not warranted.	**Addressed. No action**
26	Access Road In Section 5.2.1 the second bullet point for site operational assumptions indicates the expected number of working days per year will be 208. However, in Table 5.1 the number of operating days used for calculating average tonnage per year is 250.	Section 5.2.1 and Table 5.1	CIMA Canada Inc.	The difference between Section 5.2.1 and Table 5.1 accounts for the theoretical maximum tonnage of 2.0 tonnes per annum. The table assumes the 2.0 million tonne per annum limit is comprised of only new material extracted from the South Extension. The traffic impact assessment has been completed based on the proposed limit of 2.0 million tonnes per annum and considers asphalt production, aggregate recycling and clean fill imported for rehabilitation. With the existing 208 working days per year the tonnage would be approximately 1.75M tonnes where 250 working days per year equates to approximately 2.1M tonnes.	**Partially Addressed** Table 5 in the comments provides an updated table with 208 working days per year. However, no explanation is provided for the change in two-way truck traffic crossing Number 2 Side Road (from 85 PCE vehicles to 90 PCE vehicles during the AM during the PM) from the AM peak hour to the PM peak hour. Finally, reference is made for the Number 2 Side Road access to the Halton Region Access Management Guidelines. The Number 2 Side Road access is over 400 metres from Guelph Line. The Halton Region Access Management Guidelines for a full movement access indicates a spacing between 300 to 400 metres.	The 90 PCE is a typographical-error. The PCE calculation for two-way truck trips is 84 (24 x 3.5) Actual truck trips may vary depending on operations and service rates for vehicles hauling material over the roadway. Vehicles may not return to the southern pit extension within the same hour. Additionally, the hauling operation over the roadway may taper off during the afternoon hours, similar to the pit's overall operation. Number 2 Side Road is under the City of Burlington's Jurisdiction. Halton Region Access Management Guidelines apply to Regional Roads. Nevertheless, the space between the driveway and Guelph Line is noted to be over 400 metres and satisfies the Halton Region

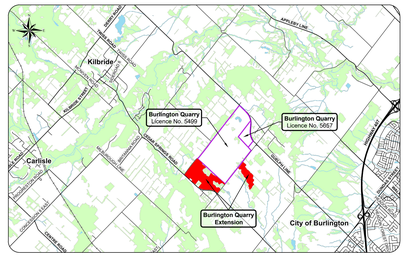
						Access Management Guidelines.
	Additionally, Table 5.1 shows the number of two-way truck trips is 24 per hour (84 PCE). However, the number of PCE vehicles per hour increase form 85 PCEs in the AM peak to 90 PCEs in the PM peak without any further background. Finally, Section 5.2.1 mentions that the South Extension Access Road will be designed to accommodate the heavy truck design vehicle (CAT 775 70-tonne rock truck) and will be stop-controlled, however no reference to the requirements of Halton Region's "Access Management Guidelines" is presented as part of the report. Update Table 5.1 with the proper estimate for the working days per year and update the affected calculations. Please provide clarification for the change in two-way truck traffic crossing Number 2 Side Road from the AM peak hour to PM peak hour. Please refer to Region's Access Management Guidelines for the South Extension's Access Road design considerations.			Although this adjustment was made, the number of working days per year has no effect on the truck trip generation as the generation based on the number of trucks, trips per hour and hours of operation. **Table 5** below provides an updated table with 208 working days. **TABLE 5: ESTIMATED SOUTH QUARRY EXTENSION CROSSING TRAFFIC** **Measure** / **Units** / **Input** / **Calculation** CAT 772 Trucks / Trucks / 4 / One Way Trips per Hour / Trips/Hour / 3 / Operating Hours per Day / Hours/Day / 10 / One way Truck Trips / Truck Trips/Day / / 120 Operating Days per Year / Days/Year / 208 / One way Truck Trips / Truck Trips/Year / / 24,960 Average Load per Truck / Tonnes/Truck / 70 / Average Tonnes per Year / Tonnes/Year* / / 1,747,200 Loaded Inbound Trips / Trucks/Hour / / 12 Empty Outbound Trips / Trucks/Hour / / 12 **Total Two-Way Truck Trips** / **Trucks/Hour** / / **24** **Extraction limited by license amount.* The No. 2 Side Road driveway is proposed approximately 485 m west of Guelph Line. No. 2 Side Road is under the City of Burlington jurisdiction and is classified as a collector roadway[3]. Halton Region Access Management Guidelines do not apply to this City roadway. But the proposed spacing between the site driveway and Guelph Line exceeds the minimum spacing guideline outlined in the Regional document. "The general spacing guidelines for a full movements access is 300 metres to 400 metres[4]." For additional information regarding the No. 2 Sideroad crossing, please see the True North Safety study provided to JART under separate cover. It is expected that the South Extension Access Road will be designed to accommodate the heavy truck design vehicle and that the northbound and southbound approaches will operate under stop control. Additional signage and/or gates to restrict the Access Road to authorized vehicles only should be considered.		No further JART comment. This is assumed to be addressed.
27.	Provision of Confidential Truck Counts In Appendix A, an NDA has been requested for release of Confidential Truck Count Data by Nelson Aggregated to the Region. The Region would like to pursue this request to allow for confirmation of TIS analysis and results, including peer review consultant permissions to view the data. Without the held data the Trip Generation assumptions about the typical truck sizes and load volumes to be expected as part of the Quarry's operations based on truck types and material loads cannot be verified. (Note: Planning's direction/assistance on how to proceed with the NDA process will be required.)	Appendix A	Halton Region	**Appendix A** in the February 2020 Traffic Study contains confidential data provided by Nelson Aggregate Co. This data was provided to the JART peer reviewer (CIMA Canada Inc.) in November 2020 subject to a Non Disclosure Agreement (NDA) with Nelson Aggregate Co. We understand the Region of Halton is relying upon the peer reviewer to conduct the review on behalf of the Region of Halton.	Refer to JART Comment response #20.	Refer to JART Comment response #20. **Addressed. No Action.**
28.	Peak Hour Factor The intersection of No. 2 Side Road and the Quarry driveway was the sole TMC to provide a 15-minute volume breakdown. CIMA was not able to verify the peak hour factor (PHF) for the other study area intersections due to the provided TMCs not having 15-minutes volume breakdowns. Please provide the full TMC for all study area intersections in Appendix B.	Appendix B	CIMA Canada Inc.	The PHF was established using existing traffic data as per the Region of Halton TIS guidelines. Full 15-minute volume breakdown TMC's for all locations are provided in **Attachment 3**.	**Addressed** Full 15-minute volume breakdown TMCs for all locations are provided in Attachment 3.	**Addressed. No Action.**
	JART Site Plan Comments (December 2021)	**Reference**	**Source of Comment**	**Applicant Response (May 2022)**		
29.	The northbound and southbound approaches to Side Road No. 2 shall be controlled by stop sign control. Comment: The information presented in the Site Plan corresponds with the recommendation provided in Section 5.2.1. of the Burlington Quarry Extension Traffic Report (February 2020) and reconfirmed by the Safety Review of the Proposed Access Plan completed by True North Safety Group (TNS) in June 2021.		CIMA Canada Inc.	**Addressed. No action.**		

30.	The new roadway crossing will be located on the crest on Side Road No. 2 (in the location shown on the plan view) with a clear sight distance of at least 215 metres in each direction along Side Road No. 2 for both the northbound and southbound approaches. Comment: The information presented in the Site Plan corresponds with the recommendation provided in Section 5.2.2. of the Burlington Quarry Extension Traffic Report (February 2020). However, the information presented in Section 2.4.5. of the TNS report indicates a recommended sight distance of 220 in each direction for the 70-tonnes trucks.		CIMA Canada Inc.	TNS reviewed the location of the proposed crossing and confirmed in Section 2.4.5 “Drivers in these trucks would have available sight distances of oncoming traffic along No 2 Side Road greater than the recommended 220 m.” The TNS is included as **Tab 3**.
31.	The roadway geometry and road bed structure will be designed to accommodate the rock trucks that the licensee plans to operate Comment: Information contained in the Site Plan should include the recommendation presented in Section 2.4.4. of the TNS report.		CIMA Canada Inc.	Section 2.4.4 of the TNS report addresses “Approach Site Distance”. The following note will be added to the proposed Burlington Quarry Extension ARA Site Plan (March 2022) and the proposed existing Burlington Quarry Site Plans: “The haul truck crossing approaches on No. 2 Sideroad shall be designed and constructed to provide an approach sight distance (i.e., visibility triangle) extending, at a minimum of 25 m on each crossing approach to a point 50 m east and west on No 2 Side Road.” The TNS is included as **Tab 3**.
32.	Prior to extraction commencing in the South Extension, the licensee will be responsible to upgrade the crossing on Side Road No. 2 to municipal standards. During operations in the South Extension, the licensee will be responsible for maintaining this crossing. The licensee is responsible for all costs associated with the crossing, including signage at the crossing. (Financial Report). Comment: No comments. Side Road No. 2 is under municipal jurisdiction.		CIMA Canada Inc.	**Addressed. No action.**
33.	Various notes on the proposed site plan should reflect the integrated nature of the operation desired by the proponent. This includes, but not limited to, capping the maximum number of vehicle trips across all licenced areas (current and proposed). The maximum number of vehicle trips shall be cumulative across all licenced areas (current and proposed).		Halton Region	The ARA Site Plans for the Extension and Existing Quarry reflect the integrated nature of the operation and includes the maximum number of vehicle trips. Regarding the maximum number of on-site trucks between the two site please see proposed Existing Quarry Site Plans (February 2022) page 2 – “On-site Operations” Notes 7 and 8 and the proposed Burlington Quarry Extension Site Plans (March 2022) – page 2 “Noise” 3 E. See **Tab 4** for the Existing Quarry Site Plans (February 2022).

Tabs

Tab **1**

Key Map
(N.T.S.)



A. General

1. This site plan is prepared under the Aggregate Resources Act (ARA) for a Class 'A' Licence, Category 2.
2. Area Calculations:

i. Licence Area (total)	**76.9 ha**
• South Extension	18.1 ha
• West Extension	58.8 ha

B. References

1. Contours were obtained from the City of Burlington's Open Data Catalogue based on 2017 data and are displayed in one metre intervals. Elevations shown are in metres above sea level (masl).
2. Topographic information was obtained from numerous sources including Ontario GeoHub (Land Information Ontario), City of Burlington's Open Data Catalogue, Google Earth Pro aerial photography captured on May 7, 2018 and field investigations for technical reports.
3. All topographic features and structures are shown to scale in Universal Transverse Mercator (UTM) with North American Datum 1983 (NAD83), Zone 17 (metre), Central Meridian 81 degrees west coordinate system.
4. The licence boundaries were established using Municipal Property Assessment Corporation (MPAC) parcel fabric data. Distances are approximate and for reference purposes only.
5. Land use designations on and within 120 metres of the licences are from the Niagara Escarpment Plan, Map 3 - Regional Municipality of Halton, approved June 1, 2017. The Burlington Quarry Extension lands are designated Escarpment Rural Area.
6. Land use information and structures identified on or within 120 metres of the licence boundaries were determined using Google Earth Pro aerial photography captured on May 7, 2018.

C. Drainage

1. Surface drainage on and within 120 metres of the licence boundaries are by overland flow in the directions shown by arrows on the plan view, or by infiltration.

D. Groundwater

1. The established groundwater table varies between 264 masl to 273 masl in the South Extension and 263 masl to 265 masl in the West Extension (EarthFX 2020).

E. Site Access and Fencing

1. There are four existing site accesses on Side Road No. 2 and a single existing site access on Cedar Springs Road.
2. Post and wire fencing (unless noted otherwise) exists in the locations shown on the plan view.

F. Aggregate Related Site Features

1. There are no existing aggregate operations or features on either Extension such as internal haul roads, processing, stockpiles, scrap, fuel storage, berms or excavation faces.

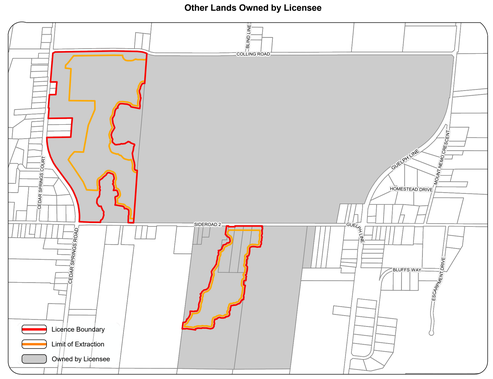
G. Cross Sections

1. See drawing 4 of 4.

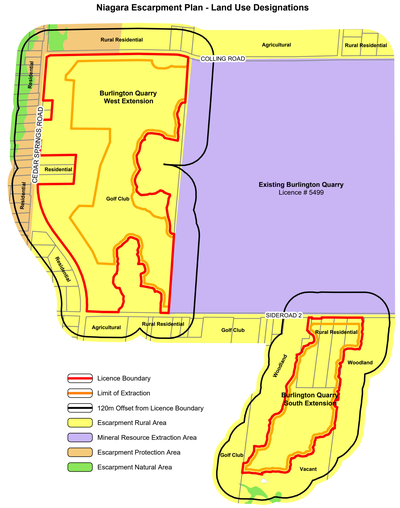
H. Technical Reports - References

1. Adaptive Management Plan, Proposed Burlington Quarry Extension, EarthFX Inc., Savanta, and Tatham Engineering, March 2022.
2. Agricultural Impact Assessment, Nelson Aggregate Co. Burlington Quarry Expansion, April 2020.
3. Air Quality Study for Nelson Aggregate Co., Burlington Quarry Extension, BCX Environmental Consulting, March 2020.
4. Archaeological Assessment (Stages 1, 2 & 3), Nelson Aggregates Quarry Expansion, Archaeologix Inc., August 2003.
5. Archaeological Assessment (Stage 4), Nelson Aggregates Quarry Expansion, Archaeologix Inc., August 2004.
6. Stage 1-2 Archaeological Assessment, Proposed West Extension of the Burlington Quarry, Golder Associates, September 2020.
7. Blast Impact Analysis, Burlington Quarry Extension, Explotech Engineering Ltd, June 16, 2021.
8. Cultural Heritage Impact Assessment Report, Burlington Quarry Extension, MacNaughton Hermsen Britton Clarkson Planning Limited (MHBC), June 2021.
9. Financial Impact Study, Proposed Burlington Quarry Extension, Nelson Aggregates Co., September 30, 2021.
10. Level 1 and 2 Hydrogeological and Hydrological Impact Assessment Report, Proposed Burlington Quarry Extension, EarthFX Incorporated, April 2020.
11. Level 1 and 2 Natural Environment Technical Report, Proposed Burlington Quarry Extension, Savanta, April 2020.
12. Noise Impact Assessment, Nelson Aggregate Quarry Extension, Howe Gastmeier Chapnik Limited, November 15, 2021.
13. Nelson Aggregate Company, Burlington Quarry Extension Traffic Report, Paradigm Transportation Solutions Limited, February 2020.
14. Surface Water Assessment, Burlington Quarry Extension, Tatham Engineering, April 2020.
15. Visual Impact Assessment Report, Proposed Extension of the Burlington Quarry, MacNaughton Hermsen Britton Clarkson Planning Limited (MHBC), June 2021.
16. Safety Review of the Proposed Access Plan for a Proposed Quarry Extension, True North Safety Group, June 2021.

Other Lands Owned by Licensee



Niagara Escarpment Plan - Land Use Designations



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

- Licence Boundary
- Limit of Extraction
- Contours with Elevation — Metres above sea level (MASL)
- Public Road
- Fence — 1.2m post & wire fence unless otherwise noted
- Water Feature
- Irrigation Pond
- Significant Woodlands
- Woodlands
- Wooded Feature
- Dripline — Staked December 3, 2021 by Savanta and Region of Halton
- Wetland — Surveyed by Savanta/MNRF in Accordance with OWES - Assumed Significant for Planning Purposes
- Wetland — MNRF Evaluated - Provincially Significant
- Wetland — MNRF Evaluated - Other (Non Provincially Significant)
- Wetland — MNRF - Unevaluated (Assumed Significant for Planning Purposes)
- 120m Offset From Licence Boundary
- Existing Licence — Existing Licenced Boundary (solid line) Existing Limit of Extraction (dashed line)
- Parcel Fabric
- Diversion or Discharge Pipe — Existing - Single Dash
- Discharge Location
- Jefferson Salamander Regulatory Boundary
- Fish Habitat — Direct - solid Indirect - dash
- Sun-Canadian Pipe Line — Pipe line location and easement
- Entrance / Exit — Existing
- Direction of Surface Drainage
- Building/Structure
- Cross Sections
- ANSI - Earth Science — (Area of Natural and Scientific Interest) Lake Medad Meltwater Channel
- ANSI - Life Science — (Area of Natural and Scientific Interest) Medad Valley

Significant Wildlife Habitat

- Amphibian Breeding (Woodland)
- Bat Maternity Colony
- Turtle Wintering Area
- Rare Vegetation Community

Species of Conservation Concern

- Unicorn Clubtail
- Eastern Wood-pewee
- Large Toothwort Community

Species at Risk

- Butternut Category 1
- Butternut Category 2
- Bat Habitat (Little Brown Myotis and Tri-coloured Bat)
- Bobolink (BP18)
- Barn Swallow Nest Observation (BSNO C)

Site Plan Amendments

No.	Date	Description	By

Site Plan Revisions (Pre-Licencing)

No.	Date	Description	By
1.	September 2020	Update date of Archaeological Assessment Report in Section H.	CAP
2.	April 2021	Included MNRF wetlands for South Extension. Added Significant Wildlife Habitat, Species of Conservation Concern and Species at Risk. Update legend.	CAP
3.	January 2022	Updated to address agency comments.	CAP
4.	February 2022	Updated to address agency comments.	CAP
5.	March 2022	Updated limit of extraction in the West Extension. Added dripline and setback dimensions from the dripline to the plan view. Revised note H.1.	CAP

No.	Date	Description	By

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
113 COLLIER STREET, BARRIE, ON, L4M 1H2 | P: 705.728.0045 F: 705.728.2010 | WWW.MHBCPLAN.COM

MNRF Approval Stamp

MHBC Stamp

Applicant

NELSON AGGREGATE CO.
2423 No. 2 Sideroad
P.O.Box 1070 Burlington Ont. L7R 4L8
phone: (905) 335-5250

Project

Burlington Quarry Extension

MNRF Licence Reference No. 626477

Pre-approval review:

Plan Scale: 1:3000 (Arch E)

0 100 200 Meters

Date March 2022

Drawn By C.P. | **Checked By** B.Z. | **File No.** 9135D

File Name

Existing Features

Drawing No.

1 of 4

File Path N:\Brian\9135D- Nelson - Project Sideways\Drawings\ARA Site Plans\Extension Site Plan\CAD\9135D - Site Plan.dwg

A. General

1. Area Calculations:

   i. Licence Area (total) **76.9 ha**
   - South Extension 18.1 ha
   - West Extension 58.8 ha

   ii. Limit of Extraction (total) **47.4 ha**
   - South Extension 14.3 ha
   - West Extension 33.1 ha

2. The maximum annual tonnage is 2,000,000.

3. The existing golf course use in the West Extension may continue to operate until site preparation for that Extension commences.

B. Hours of Operation

1. Hours of operation are Monday to Friday from 7:00am to 7:00pm excluding statutory holidays.

2. Blasting is permitted Monday to Friday between 8:00am to 6:00pm excluding statutory holidays. Blasting will typically occur once per week but may occur more often based on operational needs.

C. Site Access and Fencing

1. Prior to extraction within the South or West Extension, post and wire fencing (at least 1.2 metres in height) shall be erected and maintained (for the life of that extension) along the licence or property boundary. Portions of the West Extension licence boundary shall be exempt from this requirement (see Section O. Variations from Provincial Standards). Where the licence boundary is not fenced, it will be delineated with marker posts every 30 metres.

2. Where the licence boundary abuts significant woodlands, fencing shall be in accordance with the Tree Protection Zone detail on this drawing.

3. Prior to extraction in the South Extension, exclusion fencing (as per *MNRF 2013 Species at Risk Branch Best Practices Technical Note Reptile and Amphibian Exclusion Fencing Version 1.1*) shall be installed along the perimeter of the licence boundary (see plan view for approximate location).

4. Prior to extraction in the West Extension, exclusion fencing (as per *MNRF 2013 Species at Risk Branch Best Practices Technical Note Reptile and Amphibian Exclusion Fencing Version 1.1*) shall be installed along the west limit of extraction and extended a minimum 50 metres beyond the northern extent of the infiltration pond. The exclusion fencing shall also be installed along the southern limit of extraction until it reaches No. 2 Side Road in the southeast corner (see plan view for approximate location).

5. A new operational entrance/exit for the South Extension shall be established in the location shown on the plan view (see Section N. Report Recommendations for additional details under Traffic). Material being transferred from the South Extension to existing Licence # 5499 (see Section O. Variations from Provincial Standards) shall occur through an at grade roadway crossing on Side Road No. 2 in this location.

6. A gate shall be installed at the operational entrance/exit of the South Extension on Side Road No. 2, kept closed during hours of non-operation, and maintained throughout the life of that Extension.

7. A gate shall not be required for the field/property access located at 2280 and 2015 Side Road No. 2 (see Section O. Variations from Provincial Standards).

8. The West Extension shall be accessed through the common licence boundary with existing Licence #5499 in Phases 3 and 5. The locations shown on the plan view are approximate only.

9. Access for farm equipment shall be provided from the new operational entrance/exit in the South Extension. During operations, the eastern extraction setback may be used to transport farm equipment to the areas that have not been extracted to facilitate ongoing agricultural operations in the South Extension.

D. Drainage and Siltation Control

1. Drainage of undisturbed areas will continue in the directions shown on drawing 1 of 4.

2. Prior to site preparation, an Erosion and Sedimentation Control (ESC) Plan shall be prepared and implemented to prevent erosion or sedimentation impacts to the natural environment from operation and rehabilitation of the quarry (see Section N. Report Recommendations - Natural Environment note "a").

3. Prior to extraction in the West Extension, the infiltration pond located in the west setback (including the diversion/discharge pipe and bottom draw outlet) shall be constructed. The pond shall be excavated to an elevation of ±267 masl into bedrock. Non-aggregate material excavated from the infiltration pond will be utilized for the creation of acoustic and visual berms in the West Extension. For the portions of the pond located above bedrock, 3:1 slopes shall be established. The purpose of the diversion pipe is to convey water from the weir pond to the infiltration pond in the west setback and to provide the diffuse discharge in the northwest corner of the site.

4. Within the West Extension, the diversion and discharge pipes shall be placed in the locations shown on the plan view (see Section N. Report Recommendations - Natural Environment note "j" for timing to install the diversion pipe within the weir pond). The centreline of the diversion pipe along the north boundary of Phase 5 shall remain a minimum of 7.0 metres from the Sun-Canadian Pipe Line easement and be installed prior to constructing the berm in this vicinity.

5. Prior to removal of the irrigation ponds and irrigation channel in the West Extension, the downstream end of the golf course channel shall be blocked to isolate surface water. If water is to be pumped from the feature to facilitate site preparation, it shall be directed to the existing sump for discharge in accordance with MECP, ECA and PTTW requirements.

E. Site Preparation

1. All existing structures within the South Extension (excluding the house and barn located at 2280 Side Road No. 2) and West Extension (excluding the house and barn located at 2015 Side Road No. 2) shall be demolished prior to extraction in each Extension, in accordance with all applicable regulations (see Section N. Report Recommendations - Natural Environment note "c" as well as note "p" regarding removal of three structures within the West Extension that contain Barn Swallow habitat).

2. No new buildings are proposed for either Extension.

3. Tree removal shall not occur in the West Extension during the active season for Eastern Small-footed Myotis between March 15th and November 30th (see Section N. Report Recommendations - Natural Environment note "o").

4. Timber resources (if any) will be salvaged for use as saw logs, fence posts and fuel wood where appropriate. Stumps, trees, shrubs and brush cleared will be used for rehabilitation of this site and License #5499 to provide coarse and fine wood debris to enhance soils and create habitats during site rehabilitation.

5. Prior to the commencement of stripping in the South Extension, agricultural baseline conditions shall be established by a qualified professional for the entire extraction area, using an accredited lab for any analytical testing. Soil inspections shall be conducted at a density to allow for sufficient coverage of the area. The parameters for the baseline conditions soil testing shall be determined by the qualified professional and shall include items such as: soil macro and micronutrients, soil chemistry (e.g. pH, etc.), organic matter, soil texture and structure and bulk density.

6. In the South Extension, topsoil and subsoil for agricultural rehabilitation shall be stripped separately and used for agricultural rehabilitation in Licence #5499 in accordance with the agricultural rehabilitation notes on this page (see Section N.9 Agricultural and Section O. Variations from Provincial Standards). The remaining overburden in the South Extension not required for agricultural rehabilitation will be stripped separately and used for the construction of acoustic/visual berms and rehabilitation in the south extension. In the west extension, topsoil and overburden shall be stripped and stored separately wherever feasible (see Section O. Variations from Provincial Standards).

7. With the exception of topsoil and subsoil from the South Extension that will be used for agricultural rehabilitation in Licence #5499, the remaining topsoil and overburden shall be placed in perimeter acoustic/visual berms, pond construction or used immediately for progressive rehabilitation in either Extension or existing Licence #5499 (see Section O. Variations from Provincial Standards).

8. With the exception of topsoil and subsoil from the South Extension that will be used for agricultural rehabilitation in Licence #5499, excess topsoil and overburden not required for immediate use in berms or rehabilitation may be temporarily stockpiled on the quarry floor. Topsoil and overburden stockpiles shall be located within the limit of extraction and remain a minimum of 30 metres from the licence boundary (except where the West Extension licence boundary abuts existing Licence #5499) and 90 metres from a property with a residential use (see Section O. Variations from Provincial Standards).

9. With the exception of topsoil and subsoil from the South Extension that will be used for agricultural rehabilitation in Licence #5499, temporary topsoil and overburden stockpiles which remain for more than one year shall have their slopes vegetated to control erosion.

F. Berms and Screening

1. Acoustic and visual berms shall be constructed to the heights or elevations specified in the locations shown on the plan view. See Section N. Report Recommendations - Visual Impact Assessment notes and the Typical Acoustic & Visual Berm detail on this drawing for additional information.

2. Berms adjacent to key natural heritage features shall be constructed in accordance with Section N. Report Recommendations - Natural Environment note "d".

3. Berm side slopes shall not exceed the following maximums:

   i. South Extension
   - Northwest, north and northeast setback = 1.5:1
   - Southwest setback = 2:1

   ii. West Extension
   - North and west setback = 2:1
   - Southeast setback = 1.5:1

3. Berms in the South Extension shall be constructed prior to extraction in that extension.

4. Berms in the West Extension shall be constructed prior to extraction in that extension.

5. The north toe of the perimeter berm in the West Extension shall not be located within 1 metre of the Sun-Canadian Pipe Line easement.

6. Berms shall be vegetated with a native mix of wildflowers and grasses to stabilize slopes and minimize mowing and maintenance. The vegetation on the berms shall be maintained until the berms are removed for rehabilitation.

7. Existing vegetation within the setbacks shall be maintained except where acoustic berms, visual berms, ponds or diversion/discharge pipes are required (see Section O. Variations from Provincial Standards). Setbacks disturbed will be vegetated with a native mix of wildflowers and grasses to restore areas and minimize mowing and maintenance. A portion of the setback areas, as shown on the operations schematic, will also be forested in accordance with Section N. Report Recommendations - Natural Environment note "t".

8. Setbacks identified as forested setbacks on the plan view shall be forested (see Section N. Report Recommendations - Natural Environment notes "e" and "h" for additional information).

G. Site Dewatering

1. During the initial stages of extraction within the South Extension, a temporary settling pond will be constructed within the extraction area (eg. Phase 2). Once sufficient extraction has occurred in Phase 2, the sump and settling pond will be constructed on the quarry floor. See Adaptive Management Plan for additional details.

2. The discharge location for the South Quarry Extension shall be constructed in accordance with Section N. Report Recommendations - Natural Environment note "g".

3. For the West Extension, the water will be diverted to existing Licence #5499 and discharged from the existing sumps and discharge locations.

4. The licensee shall operate in accordance with Environmental Compliance Approval (ECA) and Permit to Take Water (PTTW) requirements.

H. Extraction Sequence

1. General
   a. Prior to set preparation in each phase, ensure all requirements contained in Sections C through G are met.

2. Phase 1
   a. Prepare Phase 1 (South Extension) for extraction and ensure all requirements pertaining to this Extension in Sections C through G of this drawing are met.
   b. Strip Phase 1 in accordance with Site Preparation notes (see Section E) and Agricultural Rehabilitation notes (see Section N.9). Any overburden not used for agricultural rehabilitation shall be used to construct perimeter berms. Should there be insufficient overburden in Phase 1 to construct berms, import excess soils to complete the perimeter berms.
   c. Create sinking cut.
   d. Commence extraction in a southerly direction and complete a noise audit to ensure the site is meeting NPC 300 Noise Guidelines at the nearest sensitive receptors. Noise audit records shall be kept by the licensee and made available to agencies upon request.
   e. Phase 1A may be extracted to a maximum depth of 271 masl.
   f. Phase 1B may be extracted to a maximum depth of 270 masl.
   g. Prepare Phase 2 for extraction.

3. Phase 2
   a. Strip Phase 2 in accordance with Site Preparation notes (see Section E) and Agricultural Rehabilitation notes (see Section N.9) in sequence as extraction progresses in a southerly direction. Stripping shall be limited to what is required for the season of operation to maximize areas remaining in agricultural production.
   b. Extract Phase 2 in a southerly direction from Phase 1 and complete a noise audit to ensure the site is meeting NPC 300 Noise Guidelines at the nearest sensitive receptors. Noise audit records shall be kept by the licensee and made available to agencies upon request.
   c. Phase 2 may be extracted to a maximum depth of 252.5 masl.
   d. As extraction advances, complete progressive rehabilitation of Phase 2.
   e. Prepare Phase 3 (West Extension) for extraction and ensure all requirements pertaining to this Extension in Sections C through G and Archaeology note "a", under Section N. Report Recommendations, of this drawing are met.
   f. Remove wooded features in Phase 3 (see Section N. Report Recommendations - Natural Environment note "o").

4. Phase 3
   a. Strip Phase 3 and a portion of Phase 4 (if required) to construct perimeter berms in West Extension.
   b. Extract Phase 3 by commencing at the common boundary with existing Licence #5499 and proceeding westerly before heading in a northwesterly direction. At the commencement of extraction, complete a noise audit to ensure the site is meeting NPC 300 Noise Guidelines at the nearest sensitive receptors. Noise audit records shall be kept by the licensee and made available to agencies upon request.
   c. Phase 3 may be extracted to a maximum depth of 252.5 masl.
   d. Complete progressive and final rehabilitation in Phases 1 and 2.
   e. Prepare Phase 4 for extraction.

5. Phase 4
   a. Strip Phase 4 and use the material for progressive rehabilitation in Phase 3 and existing Licence #5499.
   b. Extract Phase 4 in a westerly and southwesterly direction from Phase 3. At the commencement of extraction, complete a noise audit to ensure the site is meeting NPC 300 Noise Guidelines at the nearest sensitive receptors. Noise audit records shall be kept by the licensee and made available to agencies upon request.
   c. Phase 4 may be extracted to a maximum depth of 252.5 masl.
   d. Prepare Phase 5 for extraction.

6. Phase 5
   a. Strip Phase 5 and use the material for progressive rehabilitation in Phase 5 and existing Licence #5499.
   b. Continue progressive rehabilitation in Phases 3 and 4.
   c. Extract Phase 5 by commencing at the common boundary with existing Licence #5499 and proceeding in a westerly direction. At the commencement of extraction, complete a noise audit to ensure the site is meeting NPC 300 Noise Guidelines at the nearest sensitive receptors. Noise audit records shall be kept by the licensee and made available to agencies upon request.
   d. Refer to Section N. Report Recommendations - Blasting for additional requirements regarding the Sun-Canadian Pipe Line easement.
   e. Phase 5 may be extracted to a maximum depth of 252.5 masl.
   f. Prepare Phase 6 for extraction.
   g. Remove wooded feature in Phase 6 (see Section N. Report Recommendations - Natural Environment note "o").

7. Phase 6
   a. Strip Phase 6 and use the material for progressive rehabilitation in Phases 4, 5 and existing Licence #5499.
   b. Prior to extraction commencing in Phase 6, side sloping within Phase 3 shall be completed.
   c. Extract Phase 6 in a southerly direction from Phase 5. At the commencement of extraction, complete a noise audit to ensure the site is meeting NPC 300 Noise Guidelines at the nearest sensitive receptors. Noise audit records shall be kept by the licensee and made available to agencies upon request.
   d. Phase 6 may be extracted to a maximum depth of 252.5 masl.
   e. Complete progressive and final rehabilitation of the West Extension.

I. Extraction Details

1. The maximum height of a lift shall be 25 metres.

2. The maximum depth of extraction for the South Extension is 29.5 metres. Phase 1 shall be extracted in one lift and Phase 2 shall be extracted in a maximum of two lifts.

3. The maximum depth of extraction for the West Extension is 23.5 metres and the maximum number of lifts is two.

4. Extraction shall be permitted in two Phases simultaneously to allow for transition between Phases.

5. Internal haul road locations will vary as extraction progresses and will be located on the quarry floor with the exception of the at grade roadway crossing between the South Extension and existing Licence #5499.

6. Blasted aggregate will be transported back to existing Licence #5499 for processing and shipping.

7. Berms that encroach within the limit of extraction shall be removed, and the underlying aggregate may be extracted, as part of final extraction for each Extension.

J. Equipment and Processing

1. Equipment used for site preparation, extraction, pond construction, and site rehabilitation includes drills, front-end loaders, graders, bulldozers, backhoes, conveyors, water trucks, fuel trucks and haul trucks. See Section N. Report Recommendations for additional details from the Noise report regarding equipment.

2. No processing shall occur in the South or West Extension. Aggregate extracted in the South and West Extension shall be hauled to existing Licence #5499 for processing.

K. Fuel Storage

1. No fuel shall be stored in the South or West Extension.

2. Fuel trucks will be used to transfer fuel to on-site equipment in accordance with the Liquid Fuels Handling Code.

3. A Spills Contingency Program will be developed prior to site preparation.

L. Dust

1. Dust shall be mitigated on-site.

2. Water or another provincially approved dust suppressant shall be applied to internal haul roads as often as required to mitigate dust.

3. The licensee shall implement all air quality recommendations outlined in Section N. Report Recommendations.

M. Scrap and Recycling

1. No scrap shall be stored in the South and West Extension.

2. No recycling shall occur in the South and West Extension.

N. Report Recommendations

1. Air Quality

a. The Licensee shall implement their Best Management Practices Plan (BMPP) for the Control of Fugitive Dust dated March 2020, as may be amended from time to time to reflect current best management practices.

b. The Licensee shall construct the acoustic berms as shown on the operational plan. See Section F for additional detail.

2. Blasting

a. All blasts shall be monitored for both ground vibration and overpressure at the closest privately owned sensitive receptors adjacent the site, or closer, with a minimum of two (2) instruments - one installed in front of the blast and one installed behind the blast.

b. Vibration and overpressure data collected during the first 12 months of extraction in the proposed quarry extension lands will be used to calibrate and update the 2004 Golder Associates attenuation equation. The proponent shall ensure information collected includes all relevant blast and monitoring details to permit and facilitate inclusion of the data in the attenuation data and resultant equation.

c. In order to safeguard the structural integrity of the structures located at 2280 No 2 Side Road, ground vibrations shall be maintained below 50mm/s (>40Hz) in accordance with research performed by the United States Bureau of Mines (USBM RI8507). The closest structure located at 2280 No 2 Side Road shall be monitored for ground vibration and overpressure when vibration calculations suggest vibrations in excess of 35mm/s.

d. All blasts within 60m of the adjacent Sun-Canadian High Pressure Oil Pipeline will be designed and monitored by a registered engineer, licensed in the province of Ontario, or any distance specified in later revisions of the Sun-Canadian guidelines or when vibration calculations suggest vibrations in excess of 35mm/s at the pipeline.

e. To protect adjacent fish habitat, the Department of Fisheries and Oceans (DFO) has established limits for water overpressure and ground vibrations. Water overpressures are to be limited to 100kPa (year round), and in the presence of active spawning beds (March 15th to July 15th), ground vibrations at the bed are to be limited to 13mm/s. Fish habitat and assumed spawning beds are present in the Unnamed Tributary of Willoughby Creek, the Unnamed Tributary of Lake Medad and the East and West Arms of the West Branch of the Mount Nemo Tributary of Grindstone Creek. The utilization of shallower blast holes, decks, smaller hole diameters and/or changes in blasting patterns may be necessary when blasting adjacent to fish habitat at any time of year. These mitigation measures would also apply, when adjacent to spawning beds from March 15th to July 15th.

f. From March 15th to July 15th of any year, blasts shall be designed to maintain vibrations below 13mm/s at the closest point of any spawning habitat to the blast. One (1) additional seismograph shall be installed on the shoreline adjacent the closest spawning habitat to any blast performed between March 15th and July 15th when calculations suggest vibrations in excess of 75% of the DFO vibration limit may be reached at the location of a potential active spawning habitat.

g. All blasting operations encroaching the Sun Canadian High Pressure Oil Pipeline will follow all requirements in the Sun Canadian Guidelines outlined in Section 8.3 to 8.5 under the heading "Vibration and Blasting Control" and any requirements specified in later revisions of the Sun Canadian Guidelines.

h. The guideline limits for vibration and overpressure shall adhere to standards as outlined in the MECP Model Municipal Noise Control By-law publication NPC 119 (1978) or any such document, regulation or guideline which supersedes this standard.

i. In the event of an exceedance of NPC 119 limits or any such document, regulation or guideline which supersedes this standard, blast designs and protocol shall be reviewed prior to any subsequent blasts and revised accordingly in order to return the operations to compliant levels.

j. Orientation of the aggregate extraction operation will be designed and maintained so that the direction of the overpressure propagation will be away from structures as much as possible.

k. Blast designs shall be continually reviewed with respect to fragmentation, ground vibration and overpressure. Blast designs shall be modified as required to ensure compliance with current applicable guidelines and regulations.

l. Blasting procedures such as drilling and loading shall be reviewed on a yearly basis and modified as required to ensure compliance with industry standards.

m. Detailed blast records shall be maintained in accordance with current industry best practices.

3. Noise

a. Site preparation, pond construction, rehabilitation, drilling, extraction activities, and transporting material to the existing quarry for processing and shipping may only occur Monday to Friday during daytime hours (7:00 - 19:00).

b. Prior to extraction in the South Extension, all berms in this Extension shall be constructed to the heights specified in the locations shown on the plan view. Berms shall not be required in the West Extension until prior to extraction in that Extension.

c. Prior to extraction in the West Extension, all berms in this Extension shall be constructed to the heights specified in the locations shown on the plan view.

d. Equipment used on-site shall operate within the sound power levels specified below:

- drills - 110 dBA
- front-end loaders - 101 dBA
- haul trucks - 114 dBA

e. Up to three haul trucks will be used to transport material from this site to the processing area in License #5499, with a posted speed limit of 35 km/hr along this route.

f. Equipment used for site preparation, pond construction and rehabilitation shall satisfy the noise emission levels of MOE - 115, "Noise Construction Equipment".

g. If a noise complaint is received, the noise complaint will be responded to and investigated in a timely manner by the licensee in a manner commensurate to the specific context of the complaint.

4. Visual Impact Assessment

a. For both Extension areas, existing vegetation located along the site perimeter and within the setback area will be retained where possible. Berms will be laid out in a way that favours the retention of existing vegetation where possible. Any and all areas marked for tree protection shall utilize appropriate tree protection hoarding and ensure that no construction activities, grading or compaction occurs within the tree protection zone (see Tree Protection Zone detail on this drawing for additional information). This includes using these areas for the storage or staging of any materials or aggregate.

b. Visual and acoustic berms are to be installed in the location shown on the plan view and berm elevation details (on drawing 4 of 4) and to the requirements outlined below.

c. Where berms are deemed to be required, they are to only be constructed where shown on the plan view. Berms are to be constructed in a smooth, rolling manner with varying highpoints (respecting minimum height requirements), and variations along the berm frontage to create a more natural appearance. Berms should be seeded with a native mix of wildflowers and grasses to stabilize slopes and minimize mowing and maintenance.

d. The existing deciduous trees and shrubs located within 15 metres of No. 2 Side road and in front of the proposed southern noise berm in the West Extension are to be retained.

e. Visual berms proposed for the South Extension are to be planted with trees (see plan view for berm locations). Larger species will be planted along the visual berm on No. 2 Side Road while smaller species will be planted on the berm adjacent to the Camisle Golf Course. Trees will be planted at a spacing of 5 to 10 m on centre, depending on species. Plantings are to be randomly spaced and staggered up on the berm up to one third of its maximum height to appear more natural, where possible. All vegetation is to be selected for wind and salt tolerance hardiness. Native species that complement the existing surroundings are to be utilized wherever possible.

f. For the visual berm adjacent to Side Road No. 2, deciduous trees of minimum 40mm caliper, coniferous trees of minimum 1.2m height, and shrub species of minimum 40cm height shall be planted.

g. For the visual berm in the southwest corner of the South Extension, deciduous tree whips of minimum 1.2m height, coniferous trees of minimum 0.6m height, and shrub species of minimum 20cm height (or bare root stock when in season) shall be planted.

h. Plant species for the visual berm planting referenced in note 4e, f, and g may include, but are not limited to the following trees (White Pine, Common Hackberry, Chokecherry, White Spruce, Paper Birch, Pin Oak Sugar / Silver Maple, Trembling Aspen, Basswood, White Pine, White Spruce or White Cedar) and shrubs (Nannyberry, Common Ninebark, American Elder, Dogwood, or Highbush Cranberry).

i. To ensure survival and positive growth rate, the vegetative screening is to be maintained and managed appropriately so that it remains an effective visual screen over time. Allowance of natural succession to occur is encouraged, in keeping with restoration objectives.

j. During the first year of quarry operations, the planted trees will be watered and monitored until established. After the first year, the trees will be inspected twice each year. Once in spring after leaf break, and once in fall prior to leaf drop, to ensure any trees which are in poor condition at the time, are fertilized, watered and monitored, as needed, to improve their health and vigor.

k. If any of the planted trees die, they will be replaced yearly, and will be planted in spring or late summer. With annual maintenance and monitoring, the trees will have the best chance of survival, and overall, it is anticipated that the need for tree replacements during the life of the operation will be reduced.

5. Traffic

a. The northbound and southbound approaches to Side Road No. 2 shall be controlled by stop sign control.

b. The new roadway crossing will be located on the crest on Side Road No. 2 (in the location shown on the plan view) with a clear sight distance of at least 215 metres in each direction along Side Road No. 2 for both the northbound and southbound approaches.

c. The roadway geometry and road bed structure will be designed to accommodate the rock trucks that the licensee plans to operate.

d. Prior to extraction commencing in the South Extension, the licensee will be responsible to upgrade the crossing on Side Road No. 2 to municipal standards. During operations in the South Extension, the licensee will be responsible for maintaining this crossing. The licensee is responsible for all costs associated with the crossing, including any signage at the crossing (Financial Report).

e. The following notes apply for the crossing at No. 2 Side Road:

e.a. The proposed crossing location shall be constructed and maintained to provide the appropriate approach sight triangles and departure sight distances for a 70 km/hr design speed. Vegetation shall be trimmed or removed as necessary during construction to provide the recommended approach sight triangles and departure sight distances in all four quadrants.

e.b. "Truck Entrance" warning signs shall be installed on the approaches to the crossing to warn drivers along No. 2 Side Road of the possible presence of slow-moving trucks crossing the intersection.

e.c. Regulatory or information signs shall be installed prohibiting the general public from using the crossing.

e.d. Vegetation shall be maintained to ensure the approach sight distances at all accesses are provided.

e.e. Based on the existing conditions, the municipality may wish to revisit the frequency of maintenance for pavement markings, shoulder grading and pavement condition along No. 2 Side Road.

6. Water Resources and Natural Environment

a. The licensee is required to operate in accordance with the Adaptive Management Plan, prepared by EarthFX Inc., Tatham Engineering and Savanta dated March 2022, as may be amended from time to time with approval from MNRF, in consultation with NEC, Region of Halton, City of Burlington and Conservation Halton.

7. Water Resources

a. Based on current approvals for the existing quarry, the water discharge pumping at both locations will cease once extraction is complete, which would have a negative impact on flow and associated fish habitat in both watercourses (Savanta, 2020). The proposed revised rehabilitation plan would stipulate that dewatering and pumping will continue at the same locations and in the same manner to ensure there are no negative impacts to any of the hydrological features that rely on this water input. This will result in long-term enhancements to downstream fish habitat compared to the existing approved post-extraction water management plan.

b. Post rehabilitation, the West Extension is to be maintained in a dewatered state using the main discharge points to the north and south from Quarry Sump 0100 and 0200 in licence #5499 in accordance with the conditions of the PTTW and ECA to provide public water management benefits.

c. Prior to extraction commencing in each of the South and West Extensions, the licensee shall complete a residential well survey for properties within one kilometre of the extraction area.

d. If a water well (including agricultural wells) complaint is received by the licensee the following actions will be taken:

d.a. The licensee will notify MNRF and MECP of the complaint.

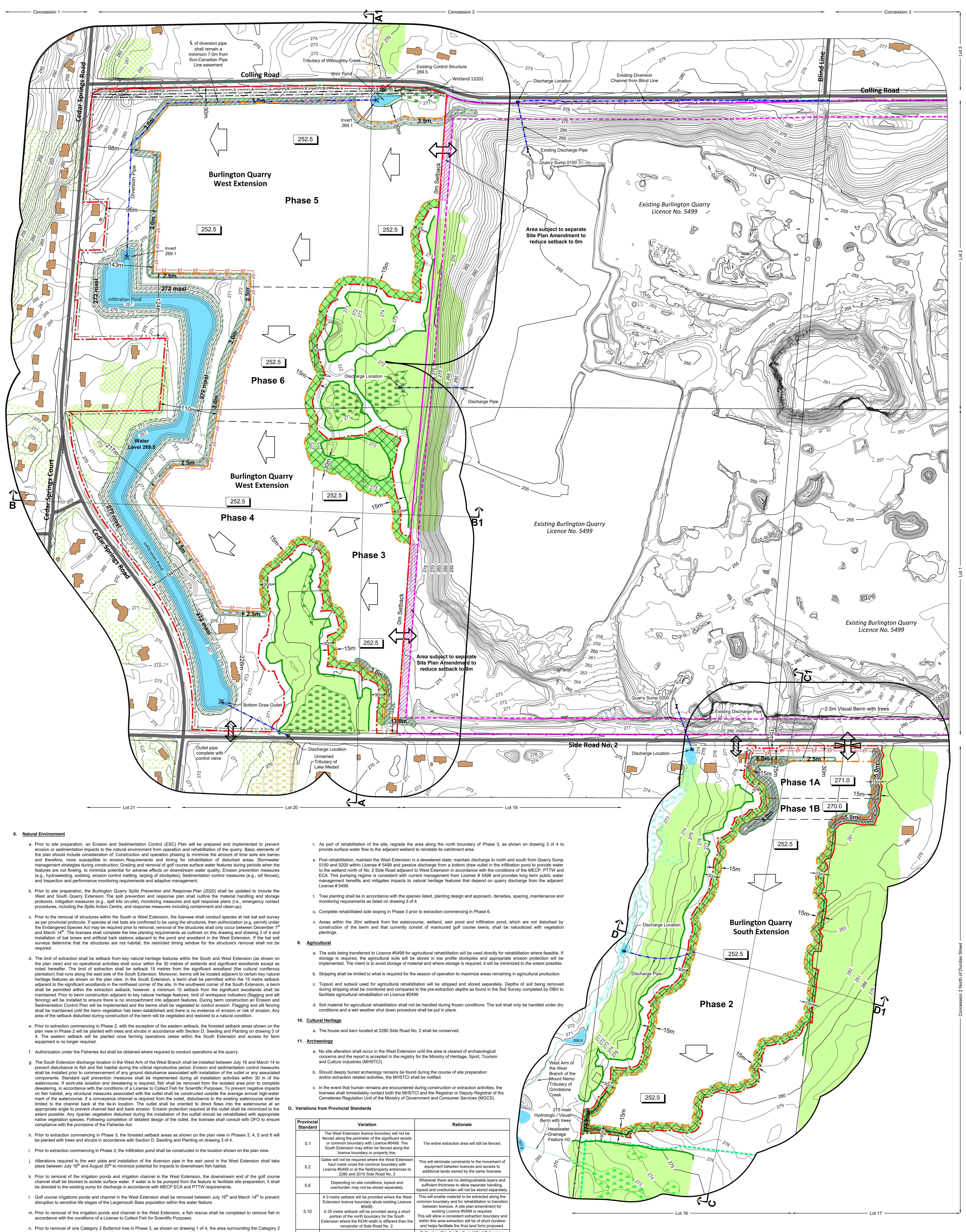
d.b. The licensee will contact a well contractor in the event of a well malfunction and the property will be provided a temporary water supply within 24 hours, if the issue cannot be easily determined and rectified.

d.c. The well contractor will contact the resident/owner with the supply issue and rectify the problem as expediently as possible, provided the landowner gives authorization for the work. If the issue raised by the landowner is related to loss of water supply, the licensee will have a consultant/contractor determine the likely causes of the loss of water supply, which can result from a number of factors, including pump failure (owner's expense), extended overuse of the well (owner's expense) or lowering of the water level in the well from potential quarry interference (licensee expense). This assessment process would be carried out at the expense of the licensee and the results provided to the landowner.

d.d. If it has been determined that the quarry caused the water supply interference, the quarry shall continue to supply water at the licensee's expense until the problem is rectified. The following mitigation measures shall be considered and the appropriate measure(s) implemented at the expense of the licensee:

- adjust pump pressure;
- lowering of the pump to take advantage of existing water storage within the well;
- deepening of the well to increase the available water column;
- widening of the well to increase the available storage of water;
- relocation of the well to another area on the property;
- drilling multiple wells; and
- only at the request of a landowner would a cistern be installed.

e. If the issue raised by the land owner is related to water quality, the licensee will have a consultant/contractor determine the likely causes of the change in water quality, and review monitoring results at the quarry and background monitoring results from the baseline well survey to determine if there is any potential correlation with the quarry. If it has been determined that the quarry caused a water quality issue, the quarry shall continue to supply water at the licensee's expense until the problem is rectified. The licensee shall be responsible for restoring the water supply by replacing the well or providing a water treatment system. Only at the request of a landowner would a cistern be supplied. The licensee is responsible for the expense to restore the water quality.



8. Natural Environment

a. Prior to site preparation, an Erosion and Sedimentation Control (ESC) Plan will be prepared and implemented to prevent erosion or sedimentation impacts to the natural environment from operation and rehabilitation of the quarry. Basic elements of the plan should include consideration of: Construction and operation phasing to minimize the amount of time soils are barren and therefore, more susceptible to erosion; Requirements and timing for rehabilitation of disturbed areas; Stormwater management strategies during construction; Grading and removal of golf course surface water features during periods when the features are not flowing, to minimize potential for adverse effects on downstream water quality; Erosion prevention measures (e.g., hydroseeding, sodding, erosion control matting, tarping of stockpiles); Sedimentation control measures (e.g., silt fences); and Inspection and performance monitoring requirements and adaptive management.

b. Prior to site preparation, the Burlington Quarry Spills Prevention and Response Plan (2020) shall be updated to include the West and South Quarry Extension. The spill prevention and response plan shall outline the material handling and storage protocols, mitigation measures (e.g., spill kits on-site), monitoring measures and spill response plans (i.e., emergency contact procedures, including the Spills Action Centre, and response measures including containment and clean-up).

c. Prior to the removal of structures within the South or West Extension, the licensee shall conduct species at risk bat exit survey as per provincial protocols. If species at risk bats are confirmed to be using the structures, then authorization (e.g. permit) under the Endangered Species Act may be required prior to removal; removal of the structures shall only occur between December 1st and March 14th. The licensee shall complete the tree planting requirements as outlined on this drawing and drawing 3 of 4 and installation of bat boxes and artificial bark stations adjacent to the pond and woodland in the West Extension. If the bat exit surveys determine that the structures are not habitat, the restricted timing window for the structure's removal shall not be required.

d. The limit of extraction shall be setback from key natural heritage features within the South and West Extension (as shown on the plan view) and no operational activities shall occur within the 30 metres of wetlands and significant woodlands except as noted hereafter. The limit of extraction shall be setback 15 metres from the significant woodland (the cultural coniferous plantation) that runs along the east side of the South Extension. Moreover, berms will be located adjacent to certain key natural heritage features as shown on the plan view. In the South Extension, a berm shall be permitted within the 15 metre setback adjacent to the significant woodlands in the northeast corner of the site. In the southwest corner of the South Extension, a berm shall be permitted within the extraction setback, however, a minimum 15 setback from the significant woodlands shall be maintained. Prior to berm construction adjacent to key natural heritage features, limit of workspace indicators (flagging and silt fencing) will be installed to ensure there is no encroachment into adjacent features. During berm construction an Erosion and Sedimentation Control Plan will be implemented and the berms shall be vegetated to control erosion. Flagging and silt fencing shall be maintained until the berm vegetation has been established and there is no evidence of erosion or risk of erosion. Any area of the setback disturbed during construction of the berm will be vegetated and restored to a natural condition.

e. Prior to extraction commencing in Phase 2, with the exception of the eastern setback, the forested setback areas shown on the plan view in Phase 2 will be planted with trees and shrubs in accordance with Section D. Seeding and Planting on drawing 3 of 4. The eastern setback will be planted once farming operations cease within the South Extension and access for farm equipment is no longer required.

f. Authorization under the Fisheries Act shall be obtained where required to conduct operations at the quarry.

g. The South Extension discharge location in the West Arm of the West Branch shall be installed between July 16 and March 14 to prevent disturbance to fish and fish habitat during the critical reproductive period. Erosion and sedimentation control measures shall be installed prior to commencement of any ground disturbance associated with installation of the outlet or any associated components. Standard spill prevention measures shall be implemented during all installation activities within 30 m of the watercourse. If work-site isolation and dewatering is required, fish shall be removed from the isolated area prior to complete dewatering, in accordance with the conditions of a License to Collect Fish for Scientific Purposes. To prevent negative impacts on fish habitat, any structural measures associated with the outlet shall be constructed outside the average annual high-water mark of the watercourse. If a conveyance channel is required from the outlet, disturbance to the existing watercourse shall be limited to the channel bank at the tie-in location. The outlet shall be oriented to direct flows into the watercourse at an appropriate angle to prevent channel bed and bank erosion. Erosion protection required at the outlet shall be minimized to the extent possible. Any riparian vegetation disturbed during the installation of the outfall should be rehabilitated with appropriate native vegetation species. Following completion of detailed design of the outlet, the licensee shall consult with DFO to ensure compliance with the provisions of the Fisheries Act.

h. Prior to extraction commencing in Phase 3, the forested setback areas as shown on the plan view in Phases 3, 4, 5 and 6 will be planted with trees and shrubs in accordance with Section D. Seeding and Planting on drawing 3 of 4.

i. Prior to extraction commencing in Phase 3, the infiltration pond shall be constructed in the location shown on the plan view.

j. Alterations required to the weir plate and installation of the diversion pipe in the weir pond in the West Extension shall take place between July 16th and August 30th to minimize potential for impacts to downstream fish habitat.

k. Prior to removal of the irrigation ponds and irrigation channel in the West Extension, the downstream end of the golf course channel shall be blocked to isolate surface water. If water is to be pumped from the feature to facilitate site preparation, it shall be directed to the existing sump for discharge in accordance with MECP ECA and PTTW requirements.

l. Golf course irrigations ponds and channel in the West Extension shall be removed between July 16th and March 14th to prevent disruption to sensitive life stages of the Largemouth Bass population within this water feature.

m. Prior to removal of the irrigation ponds and channel in the West Extension, a fish rescue shall be completed to remove fish in accordance with the conditions of a License to Collect Fish for Scientific Purposes.

n. Prior to removal of one Category 2 Butternut tree in Phase 3, as shown on drawing 1 of 4, the area surrounding the Category 2 tree will be re-surveyed to confirm that Butternut saplings have not generated. If Butternut saplings are identified, they will be assessed by an approved Butternut Health Assessor. The licensee shall register the activity under the appropriate Regulation of the Endangered Species Act and implement the requirements. In addition to the Butternut sapling survey, the health of the Category 2 Butternut tree will be reassessed by an approved Butternut Health Assessor to confirm that the tree is still Category 2 and has not regressed to a Category 1. If the Category 2 designation persists, the licensee shall register the activity under of the Endangered Species Act and implement the requirements of the registration. If the Butternut health reevaluation determines that the tree has regressed to Category 1, registration of the activity would no longer be required.

o. Removal of the wooded features in the West Extension shall only occur between December 1st and March 14th to avoid impacts to species at risk bat habitat, significant bat maternity roost habitat, species at risk significant wildlife bat species and Eastern Wood-pewee. To mitigate for the removal of these habitat designations, the licensee shall complete the tree planting requirements as outlined on this drawing and drawing 3 of 4; install bat boxes and artificial bark stations adjacent to the pond and woodland in the West Extension.

p. Prior to the removal of the three structures in the West Extension (Phase 3 - BSNO R1, Phase 5 - BSNO E and in the setback where the pond is to be constructed - BSNO B) as shown on drawing 1 of 4, the licensee shall register the activity under section 23.5, O.Reg. 242/08 of the Endangered Species Act and implement the requirements of the registration. BSNO C shall not be removed.

q. Complete rehabilitation of the site in accordance with the requirements outlined on drawing 3 of 4 to create key natural heritage and key hydrologic features, including wetlands, lakes and forested areas.

r. As part of rehabilitation of the site, regrade the area along the north boundary of Phase 3, as shown on drawing 3 of 4 to provide surface water flow to the adjacent wetland to reinstate its catchment area.

s. Post rehabilitation, maintain the West Extension in a dewatered state; maintain discharge to north and south from Quarry Sump 0100 and 0200 within License # 5499 and passive discharge from a bottom draw outlet in the infiltration pond to provide water to the wetland north of No. 2 Side Road adjacent to West Extension in accordance with the conditions of the MECP, PTTW and ECA. This pumping regime is consistent with current management from License # 5499 and provides long term public water management benefits and mitigates impacts to natural heritage features that depend on quarry discharge from the adjacent License # 5499.

t. Tree planting shall be in accordance with the species listed, planting design and approach, densities, spacing, maintenance and monitoring requirements as listed on drawing 3 of 4.

u. Complete rehabilitated side sloping in Phase 3 prior to extraction commencing in Phase 6.

v. Areas within the 30m setback from the watercourse, wetland, weir pond and infiltration pond, which are not disturbed by construction of the berm and that currently consist of manicured golf course lawns, shall be naturalized with vegetation plantings.

9. Agricultural

a. The soils being transferred to Licence #5499 for agricultural rehabilitation will be used directly for rehabilitation where feasible. If storage is required, the agricultural soils will be stored in low profile stockpiles and appropriate erosion protection will be implemented. The intent is to avoid storage of material and where storage is required, it will be minimized to the extent possible.

b. Stripping shall be limited to what is required for the season of operation to maximize areas remaining in agricultural production.

c. Topsoil and subsoil used for agricultural rehabilitation will be stripped and stored separately. Depths of soil being removed during stripping shall be monitored and compared to the pre-extraction depths as found in the Soil Survey completed by DBH to facilitate agricultural rehabilitation on Licence #5499.

d. Soil material for agricultural rehabilitation shall not be handled during frozen conditions. The soil shall only be handled under dry conditions and a wet weather shut down procedure shall be put in place.

10. Cultural Heritage

a. The house and barn located at 2280 Side Road No. 2 shall be conserved.

11. Archaeology

a. No site alteration shall occur in the West Extension until the area is cleared of archaeological concerns and the report is accepted in the registry for the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI).

b. Should deeply buried archeology remains be found during the course of site preparation and/or extraction related activities, the MHSTCI shall be notified.

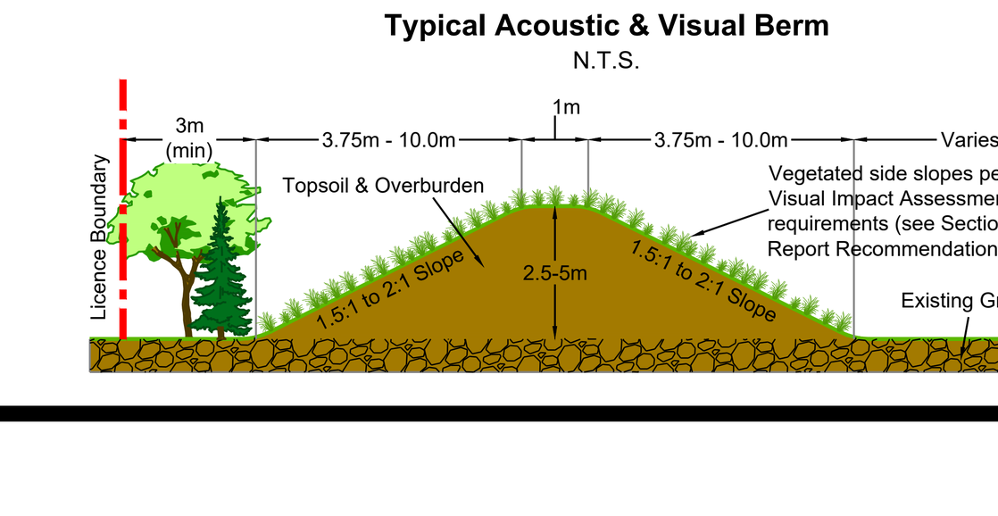
c. In the event that human remains are encountered during construction or extraction activities, the licensee shall immediately contact both the MHSTCI and the Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ministry of Government and Consumer Services (MGCS).

O. Variations from Provincial Standards

Provincial Standard	Variation	Rationale
5.1	The West Extension licence boundary will not be fenced along the perimeter of the significant woods or common boundary with Licence #5499. The South Extension may either be fenced along the licence boundary or property line.	The entire extraction area will still be fenced.
5.2	Gates will not be required where the West Extension haul roads cross the common boundary with Licence #5499 or at the field/property entrances to 2280 and 2015 Side Road No. 2	This will eliminate constraints to the movement of equipment between licences and access to additional lands owned by the same licensee.
5.6	Depending on site conditions, topsoil and overburden may not be stored separately.	Wherever there are no distinguishable layers and sufficient thickness to allow separate handling, topsoil and overburden will not be stored separately.
5.10	A 0 metre setback will be provided where the West Extension licence boundary abuts existing Licence #5499. A 25 metre setback will be provided along a short portion of the north boundary for the South Extension where the ROW width is different than the remainder of Side Road No. 2.	This will enable material to be extracted along the common boundary and for rehabilitation to transition between licences. A site plan amendment for existing Licence #5499 is required. This will allow a consistent extraction boundary and within this area extraction will be of short duration and helps facilitate the final land form proposed.
5.11	Excavation within the setback will occur to construct hydrological features during site preparation for each extension.	Setbacks within the South and West Extensions shall be temporarily excavated and disturbed to install diversion and discharge pipes. A portion of the West Extension shall be permanently excavated to establish a pond.
5.13	Topsoil and overburden within the West Extension may be temporarily located within 30m of existing Licence #5499.	The adjacent Licence #5499 is owned by the same licensee.
5.16	Topsoil and/or overburden may be transferred between the West and South Extensions and existing Licence #5499.	This will allow stripped material from site preparation to be used immediately for progressive rehabilitation in other parts of the extension and existing licence.
5.19	Portions of the quarry face shall remain vertical.	Vertical faces above and below the final lake level for the South and West Extension will create a more diverse habitat and visually appealing rehabilitated landform.

Typical Acoustic & Visual Berm

N.T.S.



Legal Description

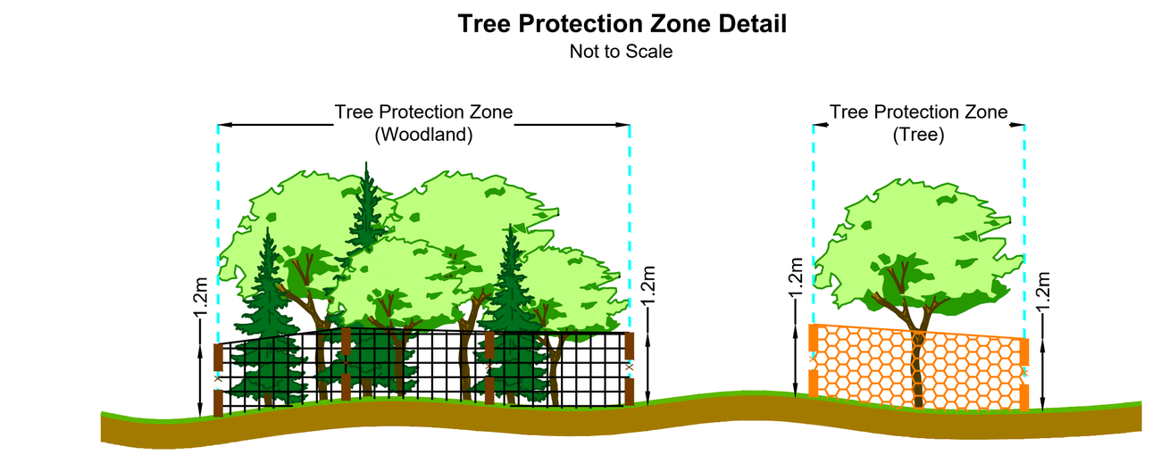
Part Lot 1 & 2, Concession 2 and Part Lot 17 & 18, Concession 2 NDS
(former geographic Township of Nelson)
City of Burlington
Region of Halton

Legend

- Licence Boundary
- 120m Offset From Licence Boundary
- Limit of Extraction
- Existing Licence — Existing Licenced Boundary (solid line); Existing Limit of Extraction (dashed line)
- Contours with Elevation — Metres above sea level (MASL)
- Parcel Fabric
- Public Road
- Diversion or Discharge Pipe — Existing - Single Dash; Proposed - Double Dash
- Fence — 1.2m post & wire fence unless otherwise noted
- Discharge Location
- Exclusion Fence — Reptile & Amphibian (Location offset for visibility purposes)
- Jefferson Salamander Regulatory Boundary
- Water Feature
- Sun-Canadian Pipe Line — Pipe line location and easement
- Significant Woodlands
- Entrance / Exit — Operational - hollow; Field / Property - hatch
- Woodlands
- Gate
- Wooded Feature
- General Direction of Excavation & Boundary
- Dripline — Staked December 3, 2021 by Savanta and Region of Halton
- Berm - Acoustic
- Wetland — Surveyed by Savanta/MNRF in Accordance with OWES - Assumed Significant for Planning Purposes
- Berm - Hydrologic
- Wetland — MNRF Evaluated - Provincially Significant
- Berm - Visual
- Wetland — MNRF Evaluated - Other (Non Provincially Significant)
- Building/Structure
- Wetland — MNRF - Unevaluated (Assumed Significant for Planning Purposes)
- Quarry Floor — Metres above sea level (MASL)
- Forested Setbacks
- Cross Sections

Tree Protection Zone Detail

Not to Scale



1. The Tree Protection Zone (TPZ) for woodlands extends the length of the woodland dripline of significant woodlands.
2. Prior to site preparation in the South and West Extension, liner fencing shall be erected along the licence boundary. The area between the licence boundary and the drip line of the significant woodland is the TPZ. The TPZ is to prevent damage and soil compaction within the TPZ.
3. Fencing material shall consist of orange plastic web snow fencing and/or page wire fencing with reflective tape.
4. Fencing material shall be installed a minimum 1.2 metres in height above grade.
5. Signage shall be posted in visible locations along the perimeter of each TPZ fence and be a minimum 25 cm x 36 cm. Each sign shall clearly state the text provided to the right.
6. The TPZ must remain fully intact and existing grade shall not be altered or disturbed. The TPZ shall not be used for storage of fill, topsoil, building materials, or equipment. There shall be no disposal of deleterious materials. Movement of vehicles and/or equipment, washing of equipment, and dumping of any kind shall be prohibited.
7. Where encroachment into the TPZ is necessary to facilitate construction of the discharge pipe, tree removal shall be kept to a minimum and the disturbed soil shall be restored with wood chips. In this location a trail will be maintained to provide access to the discharge location.

Legend
- Woodland / Tree Dripline
- Orange Plastic Web Snow Fencing
- Page Wire Fencing with Reflective Tape

Tree Protection Zone

No grade change, storage of any materials or equipment, washing of equipment, or dumping of any debris is permitted within this area.

25cm × 36cm

Site Plan Amendments

No.	Date	Description	By

Site Plan Revisions (Pre-Licencing)

No.	Date	Description	By
1.	September 2020	Adjust pond adjacent to dwelling in the southwest corner of the West Extension.	CAP
2.	April 2021	Updated notes per MNRF feedback. Added discharge locations/pipe to plan view. Updated legend and added Tree Preservation Plan detail. Included MNRF wetlands for South Extension.	CAP
3.	January 2022	Updated to address agency comments.	CAP
4.	February 2022	Updated to address agency comments.	CAP
5.	March 2022	Updated limit of extraction in the West Extension. Added dripline and setback dimensions from the dripline to the plan view. Revised notes A.1.ii, N.6.a and N.8.d.	CAP

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MNRF Approval Stamp

MHBC Stamp: BRIAN ZEMAN — Canadian Institute of Planners / Institut canadien des urbanistes — MCIP / MICU

Applicant

NELSON AGGREGATE CO.
2433 No. 2 Sideroad
P.O.Box 1070 Burlington Ont. L7R 4L8
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Project: **Burlington Quarry Extension**

MNRF Licence Reference No.: 626477	Pre-approval review:
Plan Scale: 1:3000 (Arch E) — 0, 100, 200 Meters	Date: March 2022
	Drawn By: C.P. — File No.: 9135D
	Checked By: B.Z.
File Name	Operational Plan
Drawing No.	2 of 4
File Path	N:\Brian\9135D- Nelson - Project Sideways\Drawings\ARA Site Plans\Extension Site Plan\CAD\9135D - Site Plan.dwg

Progressive Rehabilitation

A. General

1. Area Calculations:

   i. To be extracted (total) **47.4 ha**
   - South Extension 14.3 ha
   - West Extension 33.1 ha

   ii. To be rehabilitated (total) **47.4 ha**
   - South Extension 14.3 ha
   - West Extension 33.1 ha

2. The final rehabilitated land form will include the creation of 5.9 hectares of woodland located in the setback area not proposed to be extracted and 23.5 hectares of woodland located within the rehabilitated extraction area.

B. Phasing

1. As excavation reaches the limit of extraction or maximum depth, progressive rehabilitation shall commence.
2. Progressive rehabilitation shall follow the direction and sequence of extraction identified on the plan view and described in the notes on drawing 2 of 4.
3. Prior to extraction commencing in Phase 6, side sloping within Phase 3 shall be completed.

C. Slopes and Grading

1. Progressive rehabilitation will utilize a variety of rehabilitation techniques including:
   - Backfilling extraction faces and quarry floors;
   - Partially backfilling extraction faces to create a cliff with talus slope; or
   - Leaving extraction faces vertical
2. Excess soil, as defined in Ontario Regulation 406/19 under the Environmental Protection Act, may be imported to this site for the following rehabilitation purposes:
   - Creation of 3:1 and 2:1 slopes
   - Top dressing to establish vegetation
   - To establish the final elevations and grades depicted on the plan view
3. Excess soil imported for the rehabilitation purposes described above shall meet the soil quality standards set out in Table 1: "Full Depth Background Site Condition Standards", of the Rules for Soil Management and Excess Soil Quality Standards published by the Ministry of Environment, Conservation and Parks, as amended from time to time.
4. The South and West Extension contains approximately 1,190,000 m³ of topsoil and overburden that can be used for rehabilitation. It is assumed that 350,000 m³ will be transferred to the existing quarry for agricultural rehabilitation and some rehabilitation directly adjacent to the West Extension. As a result, 840,000 m³ of on-site materials will be utilized and the maximum total amount of excess soil that may be imported to this site for rehabilitation purposes is 2,160,000 m³.
5. The licensee shall ensure that the acceptance and reuse of excess soil imported for rehabilitation purposes is compliant with Part I: Rules for Soil Management of the "Rules for Soil Management and Excess Soil Quality Standards" published by the Ministry of Environment, Conservation and Park and as amended from time to time.
6. The final rehabilitated landforms established in the South and/or West Extension using the rehabilitation techniques will consist of lakes, islands, shoreline wetlands, vernal pools, beach, pond, woodlands, gradually sloping grades, 2:1 and 3:1 side slopes, cliff with talus slopes, and vertical faces as shown on the plan view.
7. Beach sand may be imported to establish the beach area in the South Extension.
8. As part of rehabilitation of the site, regrade the area along the north boundary of Phase 3, as shown on this drawing to provide surface water flow to the adjacent wetland to reinstate its catchment area.

D. Seeding and Planting

1. The side slopes and backfilled portions of the quarry floor will be seeded with the Ministry of Transportation's (MTO) Ontario Roadside Seed Mix (Creeping Red Fescue, Kentucky Bluegrass, Perennial Ryegrass and White Clover) or equivalent.
2. Ponds, wetlands, and tree planting areas identified in the plan view shall be planted in accordance with Table 1: Rehabilitation Plant List Recommendations on this drawing.
3. The planting design and approach will be guided by the Conservation Halton Landscaping and Tree Preservation Guidelines (2010).
4. Planting densities shall be determined based on the restoration objectives and presence/absence of existing natural features. For example, planting densities will be highest where the objective is to restore/establish a woodland, and meet the definition of woodland under the Forestry Act, but may be reduced if/when objective is to establish a buffer adjacent to a naturalized area. The type of species planted will also be dependent on adjacent habitat (e.g., greater reliance on shrub plantings when restoration occurs adjacent to a meadow, and tree plantings when planting next to woodland).
5. Where the restoration objective is the establishment of a woodland, trees will be planted at a minimum density of 10 trees per 100 m², in order to account for competition, stress or wildlife damage and to meet the definition of woodland under the Forestry Act. Within this area, the shrub to tree ratio will be 5:1, with trees planted no closer than 2.5 m on centre and shrubs planted between 0.75 m and 1.5 m apart.
6. Where the restoration objective is the establishment of a setback adjacent to a natural feature, planting densities will be dependent on the features they abut (e.g., densities will be higher when planting next to an existing forest relative to the densities when planting next to an anthropogenic or cultural feature). The planting design of a proposed setback adjacent to a natural feature will follow a 3-band approach, where woody planting densities will be highest within Band 1 (closest to the existing adjacent feature) and reduced in Band 2. No woody species will be planted in Band 3, which will be seeded with a soil and moisture-appropriate native seed mix. Where trees will be planted, the following planting densities will be applied: Band 1 - five trees per 100 m². Where shrubs are also being proposed, these will be planted at a shrub to tree ratio of 5:1; Band 2 - three trees per 100 m². Where shrubs are also being proposed, these will be planted at a shrub to tree ratio of 5:1.
7. Competing herbaceous vegetation will be controlled by placing mulch around each planted tree or shrub (50 cm radius of mulch around each planting). Rodent protection will be installed as necessary. Where access permits, planting will be watered during periods of drought (defined as a 30 day period between May and September with less than 25mm of precipitation) until establishment has occurred.
8. For planting in areas not extracted, plantings shall be monitored and evaluated by a qualified professional annually until "free-to-grow" conditions have been achieved. "Free-to-grow" is considered established based on a minimum stocking standard, a minimum height and freedom from competition that could impede growth. Monitoring, tending and additional planting shall occur until 1000 trees per hectare have reached "free-to-grow" condition.
9. For plantings in areas extracted, plantings shall be monitored and evaluated by a qualified professional annually until "free-to-grow" conditions have been achieved. "Free-to-grow" is considered established based on a minimum stocking standard, a minimum height and freedom from competition that could impede growth. Monitoring, tending and additional planting shall occur until 1000 trees per hectare have reached "free-to-grow" condition.

E. Drainage

1. Final surface drainage will follow the rehabilitated contours and directional arrows shown on the plan view.
2. Once the South Extension is depleted, pumping will cease and portions of the site below the ground water table will fill with water.
3. Runoff within the South Extension will drain into the lake.
4. Construct overflow outlet in the southwest corner of the South Extension.
5. Once the West Extension is depleted, the West Extension will remain in a dewatered state. Runoff within the West Extension will either drain north towards the lake or southeast into existing Licence #5499.
6. During rehabilitation the licensee shall maintain discharge to fish habitat to the north and south from Quarry Sump 0100 and 0200 within License #5499 and passive discharge from a bottom draw outlet in the infiltration pond to provide water to the wetland north of No. 2 Side Road adjacent to West Extension.
7. During rehabilitation the licensee shall operate in accordance with the conditions of the MECP, PTTW and ECA for the ongoing dewatering of the site. This pumping regime is consistent with current management from License #5499 and provides long term public water management benefits and mitigates impacts to natural heritage features that depend on quarry discharge from the adjacent License #5499.
8. The licensee has committed to: conveying the site into public ownership and to maintain the West Extension in a dewatered state by maintaining the pumping regime from License #5499 to provide long-term public water management benefits and mitigate impacts on natural heritage features which depend on quarry discharge from the adjacent License #5499.

F. Adaptive Management Plan

1. During progressive rehabilitation, until surrendering the licence, the licensee is required to operate in accordance with the Adaptive Management Plan, prepared by EarthFX Inc., Savanta and Tatham Engineering, dated March 2022, as may be amended from the time to time with approval from MNRF, in consultation with NEC, Region of Halton, City of Burlington and Conservation Halton.

Final Rehabilitation

A. General

1. All equipment shall be removed from the South and West Extension.
2. No internal haul roads shall remain in either Extension.
3. The residence and barn at 2280 Side Road No. 2 in the South Extension shall remain.
4. The residence and barn located at 2015 Side Road No. 2 in the southwest corner of the West Extension shall remain.
5. A field/property access entrance shall remain to access the residence and barn located at 2280 and 2015 Side Road No. 2.
6. The groundwater table post rehabilitation varies between 263.5 masl to 271 masl in the South Extension and 255.5 masl to 265 masl in the West Extension (EarthFX 2020) or ±269 masl if the West Extension is not maintained in a dewatered state.
7. The licensee, prior to the surrender of the licence, shall complete a Record of Site Condition for the Extensions in accordance with the Environmental Protection Act.
8. In the event that a third-party agreement is not arranged prior to site surrender, the licensee will be responsible to maintain the site in the condition consistent with this approved rehabilitation plan.

Table 1: Rehabilitation Plant List

Pond/Wetland (PW)
Grassland and Existing Trees (GL)
Gradual Grade/Side Slope with Trees (GG)
Forested Setback During Operation (FSO)
Forested Setback Post Berm (FSB)
Restored to Existing Grade and Forested (REG)

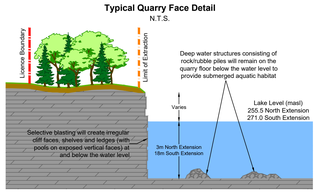
Location	LATIN NAME	COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	OWES WETLAND SPECIES	PROVINCIAL STATUS (S-RANK)	LOCAL STATUS HALTON (Varga 2005)
FSB, REG	*Sambucus racemosa ssp. pubens*	Red Elderberry	5	3		S5	X
FSB, REG	*Cornus alternifolia*	Alternate-Leaved Dogwood	6	3	T	S5	X
FSB, REG	*Cornus racemosa*	Grey Dogwood	2	0	T	S5	X
PW, FSB, REG	*Cornus sericea*	Red-Osier Dogwood	2	-3	P*	S5	X
FSB, REG	*Ribes cynosbati*	Eastern Prickly Gooseberry	4	3		S5	X
FSB, REG	*Prunus virginiana var. virginiana*	Chokecherry	2	3		S5	X
FSB, REG	*Rubus allegheniensis*	Alleghany Blackberry	2	3		S5	X
FSB, REG	*Rubus occidentalis*	Black Raspberry	2	5		S5	X
PW	*Salix discolor*	Pussy Willow	3	-3	I	S5	X
PW, FSB, REG	*Salix eriocephala*	Cottony Willow	4	-3	T	S5	X
PW, FSB, REG	*Salix interior*	Sandbar Willow	1	-3	T	S5	U
PW	*Salix petiolaris*	Meadow Willow	3	-3	T	S5	X
GG, FSB, REG	*Betula alleghaniensis*	Yellow Birch	6	0	T	S5	X
GG, FSO, FSB, REG	*Betula papyrifera*	Paper Birch	2	3	T	S5	X
GG, FSB, REG	*Carpinus caroliniana ssp. virginiana*	Blue-Beech	5	0	T	S5	X
GL, GG, FSO, FSB, REG	*Ostrya virginiana*	Eastern Hop-Hornbeam	4	3		S5	X
GL, GG, FSO, FSB, REG	*Fagus grandifolia*	American Beech	6	3		S4	X
GL, GG, FSO, FSB, REG	*Quercus macrocarpa*	Burr Oak	5	3	T	S5	X
GL, GG, FSO, FSB, REG	*Quercus rubra*	Northern Red Oak	6	3		S5	X
GL, GG, FSB, REG	*Carya cordiformis*	Bitternut Hickory	6	0		S5	X
GL, GG, FSO, FSB, REG	*Tilia americana*	Basswood	4	3		S5	X
GL, GG, FSO, FSB, REG	*Prunus serotina var. serotina*	Black Cherry	3	3		S5	X
GG, FSB, REG	*Populus balsamifera*	Balsam Poplar	4	-3	T	S5	X
GL, GG, FSO, FSB, REG	*Populus deltoides ssp. deltoides*	Eastern Cottonwood	4	0	T	S5	U
GL, GG, FSO, FSB, REG	*Populus tremuloides*	Trembling Aspen	2	0	T	S5	X
PW, GG, FSB, REG	*Salix amygdaloides*	Peach-Leaved Willow	6	-3	T	S5	U
GL, GG, FSO, FSB, REG	*Acer nigrum*	Black Maple	7	3		S4?	X
GG, FSB, REG	*Acer saccharinum*	Silver Maple	5	-3	I	S5	X
GL, GG, FSO, FSB, REG	*Acer saccharum*	Sugar Maple	4	3		S5	X
GG, FSB, REG	*Thuja occidentalis*	Eastern White Cedar	4	-3	T	S5	X
GG, FSB, REG	*Abies balsamea*	Balsam Fir	5	-3	T	S5	U
GL, GG, FSO, FSB, REG	*Picea glauca*	White Spruce	6	3	T	S5	U
GL, GG, FSO, FSB, REG	*Pinus strobus*	Eastern White Pine	4	3	T	S5	X
GL, GG, FSO, FSB, REG	*Tsuga canadensis*	Eastern Hemlock	7	3	T	S5	X

Herbaceous seed mixes will be applied where appropriate (e.g. if soil seedbank is deemed unsuitable). Potential mixes could include Upland Dry Meadow Mix, Early Succession/Riparian Mix, and Meadow Marsh Mix, following Conservation Halton guidelines.

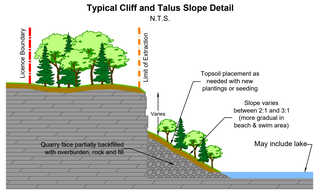
A nurse crop will be applied to exposed soil, the species of which will depend on season of application but will follow Conservation Halton guidelines.

Beach
Pond
Swim Area
Lake
Wetland / Shoreline Wetland
Vertical Face
3:1 slope (tree planting)
2:1 slope (tree planting)
Setback - grassland & existing trees
Setback - forested - planted during operations
Setback - forested - planted when berms removed
Restored catchment area and ecological linkage (tree planting)
Gradual grade (tree planting & vernal pools) or islands

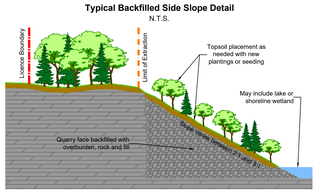
Typical Quarry Face Detail
N.T.S.



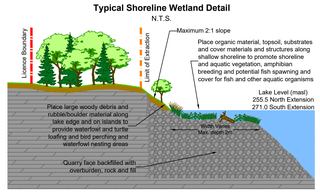
Typical Cliff and Talus Slope Detail
N.T.S.



Typical Backfilled Side Slope Detail
N.T.S.



Typical Shoreline Wetland Detail
N.T.S.



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

- Licence Boundary
- Limit of Extraction
- Contours with Elevation (Metres above sea level (MASL))
- Public Road
- Fence (1.2m post & wire fence unless otherwise noted)
- Water Feature
- Lake / Pond Licence # 5499
- Significant Woodlands
- Woodlands
- Wooded Feature
- Wetland (Surveyed by Savanta/MNRF in Accordance with OWES - Assumed Significant for Planning Purposes)
- Wetland (MNRF Evaluated - Provincially Significant)
- Wetland (MNRF Evaluated - Other (Non Provincially Significant))
- Wetland (MNRF - Unevaluated (Assumed Significant for Planning Purposes))
- 120m Offset From Licence Boundary
- Existing Licence (Existing Licenced Boundary (solid line) Existing Limit of Extraction (dashed line))
- Parcel Fabric
- Diversion or Discharge Pipe (Existing - Single Dash Proposed - Double Dash)
- Discharge Location
- Sun-Canadian Pipe Line (Pipe line location and easement)
- Jefferson Salamander Regulatory Boundary
- Entrance / Exit (Field / Property)
- Gate
- Building/Structure
- Proposed Final Grade and Slope (3.0% / -1%)
- Final Elevation of Land and Lake (MASL) (270.5)
- Cross Sections (A1)

Site Plan Amendments

No.	Date	Description	By

Site Plan Revisions (Pre-Licencing)

No.	Date	Description	By
1.	September 2020	Adjust pond adjacent to dwelling in the southwest corner of the West Extension.	CAP
2.	April 2021	Included MNRF wetlands for South Extension. Updated notes per MNRF feedback. Updated legend.	CAP
3.	January 2022	Updated to address agency comments.	CAP
4.	February 2022	Updated to address agency comments.	CAP
5.	March 2022	Updated limit of extraction in the West Extension. Added dripline to the Existing Features and Operational Plan. Revised notes A.1.ii. and F.1.	CAP

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MNRF Approval Stamp

MHBC Stamp

Applicant

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phone: (905) 335-5250

Project

Burlington Quarry Extension

MNRF Licence Reference No. 626477

Pre-approval review:

Plan Scale: 1:3000 (Arch E)

0 100 200 Meters

Date March 2022

Drawn By C.P.

Checked By B.Z.

File No. 9135D

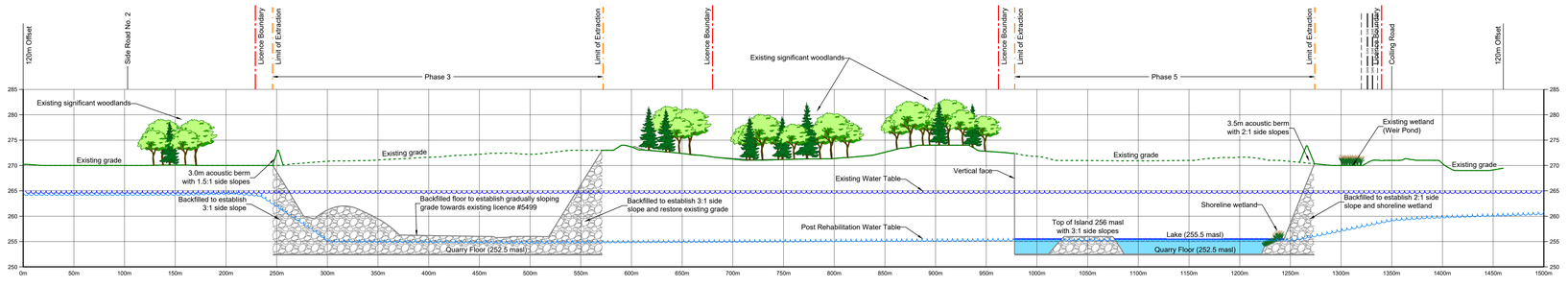
File Name

Rehabilitation Plan

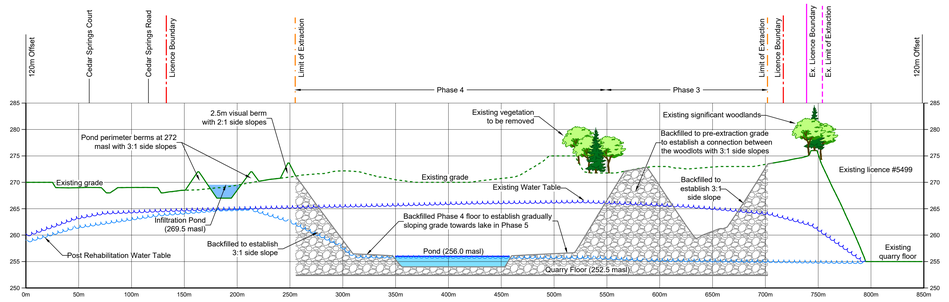
Drawing No.

3 of 4

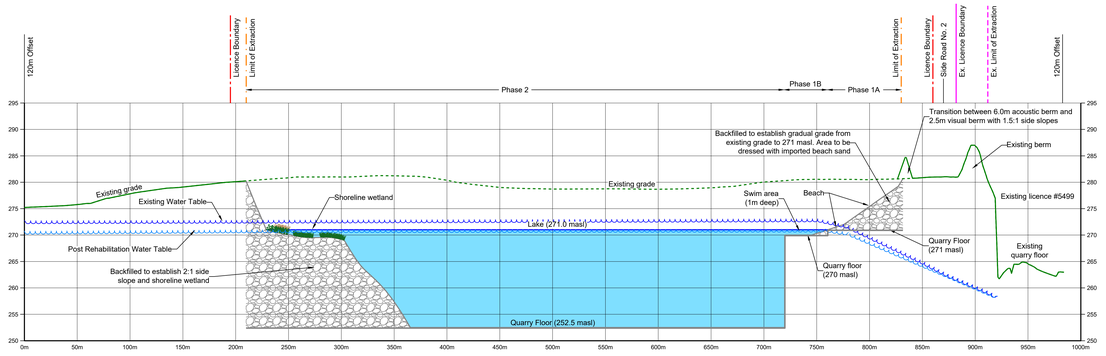
File Path N:\Brian\9135D- Nelson - Project Sideways\Drawings\ARA Site Plans\Extension Site Plan\CAD\9135D - Site Plan.dwg



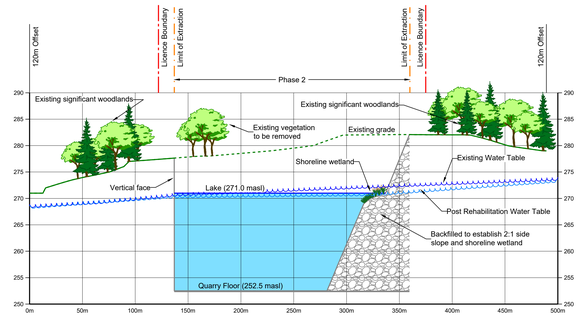
Cross Section A-A1



Cross Section B-B1



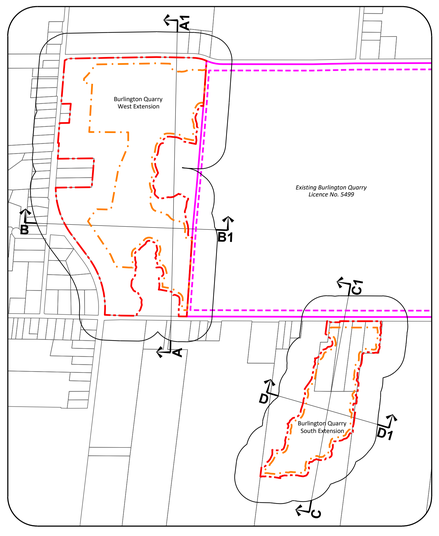
Cross Section C-C1



Cross Section D-D1

Key Map

Cross Sections



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

- Licence Boundary
- Limit of Extraction
- Existing Licence
- Existing Limit of Extraction
- 120m Offset From Licence Boundary
- Existing Grade - Removed / Altered
- Existing Grade - Undisturbed
- Quarry Floor / Face
- Berm
- Existing Water Table
- Post Rehabilitation Water Table
- Backfilled
- Lake or Pond

Site Plan Amendments

No.	Date	Description	By
1.	April 2021	Added additional cross section labels for clarity.	CAP
2.	January 2022	Updated to address agency comments.	CAP
3.	February 2022	Updated drawings 1, 2 and 3 of 4 to address agency comments.	CAP
4.	March 2022	Updated limit of extraction in the West Extension. Added dripline to the Existing Features and Operational Plan.	CAP

No.	Date	Description	By

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
113 COLLIER STREET, BARRIE, ON. L4M 1H2 | P: 705.728.0045 F: 705.728.2010 | WWW.MHBCPLAN.COM

MNRF Approval Stamp

MHBC Stamp

Applicant

NELSON AGGREGATE CO.
2433 No. 2 Sideroad
P.O.Box 1070 Burlington Ont. L7R 4L8
phone: (905) 335-5250

Project

Burlington Quarry Extension

MNRF Licence Reference No. 626477	**Pre-approval review:**
Plan Scale: Horizontal 1:2000, Vertical 1:400	**Date** March 2022
	Drawn By C.P.
	Checked By B.Z.
	File No. 9135D

File Name

Cross Sections

Drawing No.

4 of 4

File Path N:\Brian\9135D- Nelson - Project Sideways\Drawings\ARA Site Plans\Extension Site Plan\CAD\9135D - Site Plan.dwg

Tab **2**

Study Name Gravel Pit - Number 2 Sideroad east of Guelph Line
Start Date 08/10/2019
Start Time 04:00
Site Code
Project 190428 - Burlington

Type Road
Classification Motorcycles

	Number 2 Sideroad Eastbound								Number 2 Sideroad Westbound							
Start Time	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn
04:00		0		0				0				0		0		0
04:15		0		0				0				0		0		0
04:30		0		0				0				0		0		0
04:45		0		0				0				0		0		0
05:00		0		0				0				0		0		0
05:15		0		0				0				0		0		0
05:30		0		0				0				0		0		0
05:45		0		0				0				0		0		0
06:00		0		0				0				0		1		0
06:15		0		0				0				0		0		0
06:30		0		0				0				0		0		0
06:45		0		0				0				0		0		0
07:00		0		0				0				0		0		0
07:15		0		0				0				0		0		0
07:30		0		0				0				0		0		0
07:45		0		0				0				0		0		0
08:00		0		0				0				0		0		0
08:15		0		0				0				0		0		0
08:30		0		0				0				0		0		0
08:45		0		0				0				0		0		0
09:00		0		0				0				0		0		0
09:15		0		0				0				0		0		0
09:30		0		0				0				1		0		0
09:45		0		0				0				0		0		0
10:00		0		0				0				0		0		0
10:15		0		0				0				0		0		0
10:30		0		0				0				0		0		0
10:45		0		0				0				0		0		0
11:00		0		0				0				0		0		0
11:15		0		0				0				0		0		0
11:30		0		0				0				0		0		0
11:45		0		0				0				0		0		0
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12:15		0		0				0				0		0		0
12:30		0		0				0				0		0		0
12:45		0		0				0				0		0		0
13:00		0		1				0				0		0		0
13:15		0		1				0				0		0		0
13:30		0		0				0				0		0		0
13:45		0		0				0				0		0		0
14:00		0		0				0				0		0		0
14:15		0		0				0				0		0		0
14:30		0		0				0				0		0		0
14:45		0		0				0				0		0		0
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16:00		0		0				0				0		0		0
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16:30		0		0				0				0		0		0
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17:00		0		0				0				0		0		0
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18:30		0		0				0				0		0		0
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20:15		0		0				0				0		0		0
20:30		0		0				0				0		0		0
20:45		0		0				0				0		0		0

	n/a Northbound								Gravel Pit Southbound							
Start Time	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn
04:00										0				0		0
04:15										0				0		0
04:30										0				0		0
04:45										0				0		0
05:00										0				0		0
05:15										0				0		0
05:30										0				0		0
05:45										0				0		0
06:00										0				0		0
06:15										0				0		0
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19:45										0				0		0
20:00										0				0		0
20:15										0				0		0
20:30										0				0		0
20:45										0				0		0

	n/a Southeastbound								n/a Northwestbound								n/a Northeastbound								n/a Southwestbound							
Start Time	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn

Study Name **Gravel Pit - Number 2 Sideroad east of Guelph Line**
Start Date **08/10/2019**
Start Time **04:00**
Site Code
Project **190428 - Burlington**

Type **Road**
Classification **Cars & Light Goods**

	Number 2 Sideroad Eastbound								Number 2 Sideroad Westbound								n/a Northbound								Gravel Pit Southbound							
Start Time	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn
04:00		0		0				0				0		0		0										0				0		0
04:15		0		0				0				0		0		0										0				0		0
04:30		0		0				0				0		0		0										0				0		0
04:45		0		1				0				0		0		0										0				0		0
05:00		0		0				0				0		0		0										0				0		0
05:15		0		4				0				2		0		0										0				0		0
05:30		2		3				0				1		0		0										0				0		0
05:45		2		1				0				1		3		0										0				0		0
06:00		0		5				0				1		1		0										0				0		0
06:15		1		2				0				1		2		0										0				0		0
06:30		0		10				0				0		2		0										1				0		0
06:45		0		11				0				4		3		0										0				0		0
07:00		0		7				0				5		0		0										0				0		0
07:15		0		22				0				0		1		0										0				0		0
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08:30		1		11				0				5		0		0										0				1		0
08:45		0		10				0				6		0		0										0				1		0
09:00		0		6				0				4		2		0										2				0		0
09:15		0		6				0				7		1		0										0				0		0
09:30		0		6				0				5		2		0										2				0		0
09:45		0		8				0				3		0		0										0				0		0
10:00		0		2				0				1		1		0										0				0		0
10:15		0		5				0				7		0		0										0				0		0
10:30		0		6				0				1		1		0										0				0		0
10:45		0		3				0				3		1		0										0				1		0
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11:30		0		7				0				3		0		0										1				0		0
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12:00		0		8				0				5		0		0										0				0		0
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13:00		0		9				0				5		0		0										1				0		0
13:15		0		9				0				6		0		0										0				0		0
13:30		0		5				0				11		1		0										0				0		0
13:45		0		6				0				4		0		0										0				0		0
14:00		0		8				0				4		1		0										0				0		0
14:15		0		6				0				9		0		0										0				0		0
14:30		0		11				0				9		0		0										0				0		0
14:45		0		2				0				8		1		0										0				0		0
15:00		0		4				0				10		0		0										2				1		0
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19:00		0		9				0				6		0		0										0				0		0
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19:45		0		1				0				6		0		0										0				0		0
20:00		0		1				0				2		0		0										1				0		0
20:15		0		3				0				3		0		0										0				0		0
20:30		0		0				0				2		0		0										0				0		0
20:45		0		3				0				2		0		0										0				0		0

	n/a Southeastbound								n/a Northwestbound								n/a Northeastbound								n/a Southwestbound							
Start Time	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn

Study Name Gravel Pit - Number 2 Sideroad east of Guelph Line
Start Date 08/10/2019
Start Time 04:00
Site Code
Project 190428 - Burlington

Type Road
Classification Buses

	Number 2 Sideroad Eastbound								Number 2 Sideroad Westbound							
Start Time	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn
04:00		0		0				0				0		0		0
04:15		0		0				0				0		0		0
04:30		0		0				0				0		0		0
04:45		0		0				0				0		0		0
05:00		0		0				0				0		0		0
05:15		0		0				0				0		0		0
05:30		0		0				0				0		0		0
05:45		0		0				0				0		0		0
06:00		0		0				0				0		0		0
06:15		0		0				0				0		0		0
06:30		0		0				0				0		0		0
06:45		0		0				0				0		0		0
07:00		0		0				0				0		0		0
07:15		0		0				0				0		0		0
07:30		0		0				0				1		0		0
07:45		0		1				0				0		0		0
08:00		0		0				0				0		0		0
08:15		0		0				0				1		0		0
08:30		0		0				0				1		0		0
08:45		0		1				0				0		0		0
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09:15		0		0				0				0		0		0
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16:00		0		0				0				0		0		0
16:15		0		2				0				0		0		0
16:30		0		0				0				0		0		0
16:45		0		1				0				0		0		0
17:00		0		0				0				0		0		0
17:15		0		0				0				0		0		0
17:30		0		0				0				0		0		0
17:45		0		0				0				0		0		0
18:00		0		0				0				0		0		0
18:15		0		0				0				0		0		0
18:30		0		0				0				0		0		0
18:45		0		0				0				0		0		0
19:00		0		0				0				0		0		0
19:15		0		0				0				0		0		0
19:30		0		0				0				0		0		0
19:45		0		0				0				0		0		0
20:00		0		0				0				0		0		0
20:15		0		0				0				0		0		0
20:30		0		0				0				0		0		0
20:45		0		0				0				0		0		0

	n/a Northbound								Gravel Pit Southbound							
Start Time	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn
04:00										0				0		0
04:15										0				0		0
04:30										0				0		0
04:45										0				0		0
05:00										0				0		0
05:15										0				0		0
05:30										0				0		0
05:45										0				0		0
06:00										0				0		0
06:15										0				0		0
06:30										0				0		0
06:45										0				0		0
07:00										0				0		0
07:15										0				0		0
07:30										0				0		0
07:45										0				0		0
08:00										0				0		0
08:15										0				0		0
08:30										0				0		0
08:45										0				0		0
09:00										0				0		0
09:15										0				0		0
09:30										0				0		0
09:45										0				0		0
10:00										0				0		0
10:15										0				0		0
10:30										0				0		0
10:45										0				0		0
11:00										0				0		0
11:15										0				0		0
11:30										0				0		0
11:45										0				0		0
12:00										0				0		0
12:15										0				0		0
12:30										0				0		0
12:45										0				0		0
13:00										0				0		0
13:15										0				0		0
13:30										0				0		0
13:45										0				0		0
14:00										0				0		0
14:15										0				0		0
14:30										0				0		0
14:45										0				0		0
15:00										0				0		0
15:15										0				0		0
15:30										0				0		0
15:45										0				0		0
16:00										0				0		0
16:15										0				0		0
16:30										0				0		0
16:45										0				0		0
17:00										0				0		0
17:15										0				0		0
17:30										0				0		0
17:45										0				0		0
18:00										0				0		0
18:15										0				0		0
18:30										0				0		0
18:45										0				0		0
19:00										0				0		0
19:15										0				0		0
19:30										0				0		0
19:45										0				0		0
20:00										0				0		0
20:15										0				0		0
20:30										0				0		0
20:45										0				0		0

n/a Southeastbound								n/a Northwestbound								n/a Northeastbound								n/a Southwestbound							
Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn

Study Name Gravel Pit - Number 2 Sideroad east of Guelph Line
Start Date 06/10/2015
Start Time 04:00
Site Code
Project 160428 - Burlington

Type Road
Class/Position Single Unit Trucks

	Number 2 Sideroad							Number 2 Sideroad							n/a							Gravel Pit							n/a							n/a							n/a						
	Eastbound							Westbound							Southbound							Northbound							Eastbound							Westbound							Southbound						
Start Time	Heavy Left	Left	Heavy Left	Thru	Heavy Rt	Right	Heavy Rt	Heavy Left	Left	Heavy Left	Thru	Heavy Rt	Right	Heavy Rt	Heavy Left	Left	Heavy Left	Thru	Heavy Rt	Right	Heavy Rt	Heavy Left	Left	Heavy Left	Thru	Heavy Rt	Right	Heavy Rt	Heavy Left	Left	Heavy Left	Thru	Heavy Rt	Right	Heavy Rt	Heavy Left	Left	Heavy Left	Thru	Heavy Rt	Right	Heavy Rt	Heavy Left	Left	Heavy Left	Thru	Heavy Rt	Right	Heavy Rt
04:00	0		0		0			0		0		0			0		0		0			0		0		0			0		0		0			0		0		0			0		0		0		
04:15	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
04:30	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
04:45	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
05:00	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
05:15	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
05:30	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
05:45	0		0					0		2					0		0					0		0					0		0					0		0					0		0				
06:00	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
06:15	0		0					0		3					0		0					0		0					0		0					0		0					0		0				
06:30	0		0					0		3					0		0					0		0					0		0					0		0					0		0				
06:45	0		0					0		4					0		0					0		0					0		0					0		0					0		0				
07:00	1		0					0		6					0		0					0		0					0		0					0		0					0		0				
07:15	0		0					0		6					0		0					0		0					0		0					0		0					0		0				
07:30	0		0					0		6					0		0					0		0					0		0					0		0					0		0				
07:45	0		0					0		9					0		0					0		0					0		0					0		0					0		0				
08:00	0		0					1		7					0		0					1		0					0		0					0		0					0		0				
08:15	0		0					0		7					0		0					0		0					0		0					0		0					0		0				
08:30	0		0					0		9					0		0					0		0					0		0					0		0					0		0				
08:45	0		0					1		7					0		0					0		1					0		0					0		0					0		0				
09:00	0		0					0		10					0		0					0		0					0		0					0		0					0		0				
09:15	0		0					0		9					0		0					0		0					0		0					0		0					0		0				
09:30	0		0					0		9					0		0					0		0					0		0					0		0					0		0				
09:45	0		0					0		7					0		0					0		0					0		0					0		0					0		0				
10:00	1		0					0		15					0		0					0		0					0		0					0		0					0		0				
10:15	0		1					1		11					0		0					0		1					0		0					0		0					0		0				
10:30	0		0					0		12					0		0					0		0					0		0					0		0					0		0				
10:45	0		0					0		12					0		0					0		0					0		0					0		0					0		0				
11:00	0		0					1		8					0		0					0		0					0		0					0		0					0		0				
11:15	0		1					0		4					0		0					0		0					0		0					0		0					0		0				
11:30	0		0					0		7					0		0					0		0					0		0					0		0					0		0				
11:45	0		0					0		9					0		0					0		0					0		0					0		0					0		0				
12:00	0		0					0		7					0		0					0		0					0		0					0		0					0		0				
12:15	0		0					0		12					0		0					0		0					0		0					0		0					0		0				
12:30	0		0					0		12					0		0					0		0					0		0					0		0					0		0				
12:45	0		0					0		9					0		0					0		0					0		0					0		0					0		0				
13:00	0		0					0		9					0		0					0		0					0		0					0		0					0		0				
13:15	0		1					0		7					0		0					0		0					0		0					0		0					0		0				
13:30	0		0					0		7					0		0					0		0					0		0					0		0					0		0				
13:45	0		1					0		6					0		0					0		0					0		0					0		0					0		0				
14:00	0		1					1		11					0		0					0		0					0		0					0		0					0		0				
14:15	0		0					0		12					0		0					0		0					0		0					0		0					0		0				
14:30	0		0					0		13					0		0					0		0					0		0					0		0					0		0				
14:45	0		0					0		9					0		0					0		0					0		0					0		0					0		0				
15:00	0		0					0		9					0		0					0		0					0		0					0		0					0		0				
15:15	0		0					1		4					0		0					0		0					0		0					0		0					0		0				
15:30	0		0					0		5					0		0					0		0					0		0					0		0					0		0				
15:45	0		0					0		3					0		0					0		0					0		0					0		0					0		0				
16:00	0		0					0		7					0		0					0		0					0		0					0		0					0		0				
16:15	0		0					0		2					0		0					0		0					0		0					0		0					0		0				
16:30	0		0					0		3					0		0					0		0					0		0					0		0					0		0				
16:45	0		0					0		4					0		0					0		0					0		0					0		0					0		0				
17:00	0		0					1		0					0		0					0		1					0		0					0		0					0		0				
17:15	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
17:30	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
17:45	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
18:00	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
18:15	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
18:30	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
18:45	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
19:00	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
19:15	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
19:30	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
19:45	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
20:00	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
20:15	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
20:30	0		0					0		0					0		0					0		0					0		0					0		0					0		0				
20:45	0		0					0		0					0		0					0		0					0		0					0		0					0		0				

Study Name Gravel Pit - Number 2 Sideroad east of Guelph Line
Start Date 08/10/2019
Start Time 04:00
Site Code
Project 190428 - Burlington

Type Road
Classification Articulated Trucks

	Number 2 Sideroad Eastbound								Number 2 Sideroad Westbound								n/a Northbound								Gravel Pit Southbound							
Start Time	Hard Left	Left	Rear Left	Thru	Rear Right	Right	Hard Right	U-Turn	Hard Left	Left	Rear Left	Thru	Rear Right	Right	Hard Right	U-Turn	Hard Left	Left	Rear Left	Thru	Rear Right	Right	Hard Right	U-Turn	Hard Left	Left	Rear Left	Thru	Rear Right	Right	Hard Right	U-Turn
04:00		0		0				0				0		0		0										0				0		0
04:15		0		0				0				0		0		0										0				0		0
04:30		0		0				0				0		0		0										0				0		0
04:45		0		0				0				0		0		0										0				0		0
05:00		0		0				0				0		0		0										0				0		0
05:15		0		0				0				0		1		0										0				0		0
05:30		0		0				0				0		1		0										0				0		0
05:45		0		0				0				0		1		0										0				0		0
06:00		0		0				0				0		6		0										1				0		0
06:15		0		0				0				0		4		0										2				0		0
06:30		0		0				0				0		1		0										6				0		0
06:45		0		0				0				0		1		0										4				0		0
07:00		0		0				0				0		0		0										1				0		0
07:15		0		0				0				0		1		0										1				0		0
07:30		0		0				0				0		4		0										0				0		0
07:45		0		0				0				0		5		0										4				0		0
08:00		0		0				0				1		1		0										5				0		0
08:15		0		0				0				0		0		0										2				0		0
08:30		0		0				0				0		0		0										0				0		0
08:45		0		0				0				0		2		0										0				0		0
09:00		0		0				0				0		3		0										2				0		0
09:15		0		0				0				1		3		0										2				0		0
09:30		0		0				0				0		1		0										4				0		0
09:45		0		0				0				0		2		0										1				0		0
10:00		0		0				0				0		0		0										1				0		0
10:15		0		0				0				0		4		0										0				0		0
10:30		0		0				0				0		0		0										2				0		0
10:45		0		0				0				0		3		0										2				0		0
11:00		0		1				0				0		1		0										2				0		0
11:15		0		0				0				0		0		0										1				0		0
11:30		0		0				0				0		2		0										0				0		0
11:45		0		0				0				0		3		0										1				0		0
12:00		0		0				0				0		3		0										2				0		0
12:15		0		0				0				0		1		0										2				0		0
12:30		0		0				0				0		0		0										4				0		0
12:45		0		0				0				0		2		0										0				0		0
13:00		0		0				0				0		2		0										1				0		0
13:15		0		0				0				0		0		0										1				0		0
13:30		0		0				0				1		4		0										2				0		0
13:45		0		0				0				0		3		0										3				0		0
14:00		0		0				0				0		2		0										3				0		0
14:15		0		0				0				0		1		0										3				0		0
14:30		0		0				0				0		1		0										0				0		0
14:45		0		0				0				0		1		0										2				0		0
15:00		0		0				0				0		2		0										1				0		0
15:15		0		0				0				0		5		0										1				0		0
15:30		0		0				0				1		1		0										4				0		0
15:45		0		0				0				0		1		0										2				0		0
16:00		0		0				0				0		2		0										3				0		0
16:15		0		1				0				0		0		0										0				0		0
16:30		0		0				0				0		0		0										2				0		0
16:45		0		0				0				0		1		0										0				0		0
17:00		0		0				0				0		0		0										0				0		0
17:15		0		0				0				0		0		0										1				0		0
17:30		0		1				0				0		0		0										0				0		0
17:45		0		0				0				0		0		0										0				0		0
18:00		0		0				0				0		0		0										0				0		0
18:15		0		0				0				0		0		0										0				0		0
18:30		0		0				0				0		0		0										0				0		0
18:45		0		0				0				0		0		0										0				0		0
19:00		0		0				0				0		0		0										0				0		0
19:15		0		0				0				0		0		0										0				0		0
19:30		0		0				0				0		0		0										0				0		0
19:45		0		0				0				0		0		0										0				0		0
20:00		0		0				0				0		0		0										0				0		0
20:15		0		0				0				1		0		0										0				0		0
20:30		0		0				0				0		0		0										0				0		0
20:45		0		0				0				0		0		0										0				0		0

n/a Southeastbound								n/a Northwestbound								n/a Northeastbound								n/a Southwestbound							
Hard Left	Left	Rear Left	Thru	Rear Right	Right	Hard Right	U-Turn	Hard Left	Left	Rear Left	Thru	Rear Right	Right	Hard Right	U-Turn	Hard Left	Left	Rear Left	Thru	Rear Right	Right	Hard Right	U-Turn	Hard Left	Left	Rear Left	Thru	Rear Right	Right	Hard Right	U-Turn

Study Name **Gravel Pit - Number 2 Sideroad east of Guelph Line**
Start Date **08/10/2019**
Start Time **04:00**
Site Code
Project **190428 - Burlington**

Type **Road**
Classification **Bicycles on Road**

	Number 2 Sideroad Eastbound								Number 2 Sideroad Westbound								n/a Northbound								Gravel Pit Southbound								n/a Southeastbound								n/a Northwestbound								n/a Northeastbound								n/a Southwestbound							
Start Time	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn
04:00		0		0				0				0		0		0											0				0		0																																	
04:15		0		0				0				0		0		0											0				0		0																																	
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06:45		0		0				0				0		0		0											0				0		0																																	
07:00		0		1				0				0		0		0											0				0		0																																	
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20:45		0		0				0				0		0		0											0				0		0																																	

Study Name Dorset Pit - Number 2 Sideroad east of Guelph Line
Start Date 06/10/2015
Start Time 04:00
Site Code
Project 150428 - Burlington

Type Crosswalk
Classification Bicycles on Crosswalk

	Number 2 Sideroad		Number 2 Sideroad		n/a		Dorset Pit		n/a		n/a		n/a		n/a	
	Crosswalk		Crosswalk		Crosswalk		Crosswalk		Crosswalk		Crosswalk		Crosswalk		Crosswalk	
Start Time	Peds NB	Peds SB	Peds EB	Peds WB	Peds EB	Peds WB	Peds NB	Peds SB	Peds EB	Peds WB	Peds NB	Peds SB	Peds EB	Peds WB	Peds NB	Peds SB
04:00	0	0	0	0			0	0								
04:15	0	0	0	0			0	0								
04:30	0	0	0	0			0	0								
04:45	0	0	0	0			0	0								
05:00	0	0	0	0			0	0								
05:15	0	0	0	0			0	0								
05:30	0	0	0	0			0	0								
05:45	0	0	0	0			0	0								
06:00	0	0	0	0			0	0								
06:15	0	0	0	0			0	0								
06:30	0	0	0	0			0	0								
06:45	0	0	0	0			0	0								
07:00	0	0	0	0			0	0								
07:15	0	0	0	0			0	0								
07:30	0	0	0	0			0	0								
07:45	0	0	0	0			0	0								
08:00	0	0	0	0			0	0								
08:15	0	0	0	0			0	0								
08:30	0	0	0	0			0	0								
08:45	0	0	0	0			0	0								
09:00	0	0	0	0			0	0								
09:15	0	0	0	0			0	0								
09:30	0	0	0	0			0	0								
09:45	0	0	0	0			0	0								
10:00	0	0	0	0			0	0								
10:15	0	0	0	0			0	0								
10:30	0	0	0	0			0	0								
10:45	0	0	0	0			0	0								
11:00	0	0	0	0			0	0								
11:15	0	0	0	0			0	0								
11:30	0	0	0	0			0	0								
11:45	0	0	0	0			0	0								
12:00	0	0	0	0			0	0								
12:15	0	0	0	0			0	0								
12:30	0	0	0	0			0	0								
12:45	0	0	0	0			0	0								
13:00	0	0	0	0			0	0								
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13:30	0	0	0	0			0	0								
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14:00	0	0	0	0			0	0								
14:15	0	0	0	0			0	0								
14:30	0	0	0	0			0	0								
14:45	0	0	0	0			0	0								
15:00	0	0	0	0			0	0								
15:15	0	0	0	0			0	0								
15:30	0	0	0	0			0	0								
15:45	0	0	0	0			0	0								
16:00	0	0	0	0			0	0								
16:15	0	0	0	0			0	0								
16:30	0	0	0	0			0	0								
16:45	0	0	0	0			0	0								
17:00	0	0	0	0			0	0								
17:15	0	0	0	0			0	0								
17:30	0	0	0	0			0	0								
17:45	0	0	0	0			0	0								
18:00	0	0	0	0			0	0								
18:15	0	0	0	0			0	0								
18:30	0	0	0	0			0	0								
18:45	0	0	0	0			0	0								
19:00	0	0	0	0			0	0								
19:15	0	0	0	0			0	0								
19:30	0	0	0	0			0	0								
19:45	0	0	0	0			0	0								
20:00	0	0	0	0			0	0								
20:15	0	0	0	0			0	0								
20:30	0	0	0	0			0	0								
20:45	0	0	0	0			0	0								

Study Name Dorset Pit - Number 2 Sidewalk east of Guelph Line
Start Date 06/10/2015
Start Time 04:00
Site Code
Project 160428 - Burlington

Type Crosswalk
Class/Dualism Pedestrians

	Number 2 Sidewalk east of Guelph Line				Number 2 Sidewalk west of Guelph Line				n/a Guelph Line				Dorset Pit				n/a Guelph Line				n/a Guelph Line				n/a Guelph Line				n/a Guelph Line			
Start Time	Peds CW	Peds CCW	Ped Points	Ped Volume	Peds CW	Peds CCW	Ped Points	Ped Volume	Peds CW	Peds CCW	Ped Points	Ped Volume	Peds CW	Peds CCW	Ped Points	Ped Volume	Peds CW	Peds CCW	Ped Points	Ped Volume	Peds CW	Peds CCW	Ped Points	Ped Volume	Peds CW	Peds CCW	Ped Points	Ped Volume	Peds CW	Peds CCW	Ped Points	Ped Volume
04:00	0	0		0	0	0		0					0	0		0																
04:15	0	0		0	0	0		0					0	0		0																
04:30	0	0		0	0	0		0					0	0		0																
04:45	0	0		0	0	0		0					0	0		0																
05:00	0	0		0	0	0		0					0	0		0																
05:15	0	0		0	0	0		0					0	0		0																
05:30	0	0		0	0	0		0					0	0		0																
05:45	0	0		0	0	0		0					0	0		0																
06:00	0	0		0	0	0		0					0	0		0																
06:15	0	0		0	0	0		0					0	0		0																
06:30	0	0		0	0	0		0					0	0		0																
06:45	0	0		0	0	0		0					0	0		0																
07:00	0	0		0	0	0		0					0	0		0																
07:15	0	0		0	0	0		0					0	0		0																
07:30	0	0		0	0	0		0					0	0		0																
07:45	0	0		0	0	0		0					0	0		0																
08:00	0	0		0	0	0		0					0	0		0																
08:15	0	0		0	0	0		0					0	0		0																
08:30	0	0		0	0	0		0					0	0		0																
08:45	0	0		0	0	0		0					0	0		0																
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20:30	0	0		0	0	0		0					0	0		0																
20:45	0	0		0	0	0		0					0	0		0																

Study Name Gravel Pit - Number 2 Sideroad east of Guelph Line
Start Date 08/10/2019
Start Time 04:00
Site Code
Project 190428 - Burlington

Type Road
Classification Totals

	Number 2 Sideroad Eastbound								Number 2 Sideroad Westbound								n/a Northbound								Gravel Pit Southbound								n/a Southeastbound								n/a Northwestbound								n/a Northeastbound								n/a Southwestbound							
Start Time	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn	Hard Left	Left	Bear Left	Thru	Bear Right	Right	Hard Right	U-Turn
04:00		0		0				0				0		0		0										0				0		0																																
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05:30		2		3				0				1		1		0										0				0		0																																
05:45		2		1				0				1		6		0										0				0		0																																
06:00		0		5				0				1		8		0										1				0		0																																
06:15		1		2				0				1		9		0										2				0		0																																
06:30		0		10				0				0		8		0										9				0		0																																
06:45		0		11				0				4		8		0										7				0		0																																
07:00		1		8				0				6		8		0										9				0		0																																
07:15		0		22				0				0		8		0										6				0		0																																
07:30		0		22				0				11		11		0										5				0		0																																
07:45		0		21				0				6		14		0										9				0		0																																
08:00		0		24				0				10		10		0										16				0		0																																
08:15		0		18				0				7		8		0										11				0		0																																
08:30		1		11				0				6		9		0										9				1		0																																
08:45		0		11				0				7		5		0										8				2		0																																
09:00		0		6				0				4		19		0										10				0		0																																
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10:30		0		6				0				1		13		0										6				0		0																																
10:45		0		3				0				3		15		0										20				1		0																																
11:00		0		9				0				3		9		0										14				1		0																																
11:15		0		8				0				6		4		0										15				0		0																																
11:30		0		7				0				3		9		0										6				0		0																																
11:45		0		7				0				7		12		0										6				0		0																																
12:00		0		8				0				5		10		0										10				0		0																																
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Tab **3**

TRUE NORTH SAFETY GROUP

SAFETY REVIEW OF THE PROPOSED ACCESS PLAN FOR A PROPOSED QUARRY EXTENSION

Location: City of Burlington, Ontario
Our File: 210020

Prepared for:

Nelson Aggregates Co.
c/o Ms. Tecia White
tecia@white-water.ca

June, 2021

Josée Dumont,
M.A.Sc., RSP2I, P.Eng.

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Background

Nelson Aggregates is applying for an extension to its existing aggregate quarry. The existing quarry is located at 2433 No 2 Side Road, in the City of Burlington. The extension is proposed to occur in phases and in two areas:

- An area to the south of the existing quarry, across No. 2 Side Road, with a proposed at grade crossing; and
- An area immediately to the west of the existing quarry, with access through the existing quarry.

The current quarry can currently haul an unlimited amount of aggregates but has historically been averaging 1.5 to 2.0 million tonnes per year. Nelson aggregates plans to generate approximately 1.0 million tonnes of aggregate annually with the proposed extensions. Paradigm Transportation Solutions Limited prepared a traffic impact assessment in February 2020 in support of the application (hereafter referred to as 'Paradigm' and the 'Paradigm report'). Paradigm used a production limit of 2.0 million tonnes of aggregate annually in their assessment. The estimated number of daily trips are shown in **Table 1**. [1]

Table 1: Number and type or expected vehicles at each driveway.

Vehicle Type and Driveway	AM Peak Period		PM Peak Period	
	Inbound	Outbound	Inbound	Outbound
Existing north driveway				
Light vehicles	1	0	0	13
Heavy vehicles (12-42 tonnes)	56	55	0	3
Heavy vehicles (70 tonnes)	12	12	12	12
Proposed south driveway				
Light vehicles	0	0	0	0
Heavy vehicles (12-42 tonnes)	0	0	0	0
Heavy vehicles (70 tonnes)	12	12	12	12

The trucks will continue to use the existing haul routes. Except for local delivery, all trucks will use No 2 Side Road and Guelph Line.

True North Safety Group (TNS) was engaged by Nelson Aggregate Co. on March 4, 2021, to complete a safety review of the heavy truck operations at the current accesses and proposed crossing. TNS completed a site assessment on April 5, 2021.

[1] Nelson Aggregate Company Burlington Quarry Extension Traffic Report, Paradigm Transportation Solutions Limited, February 2020.

1.2 Study Area

The existing quarry is located north of No 2 Side Road, between Guelph Line and Cedar Springs Road. The proposed extensions are located north of No 2 Side Road, immediately west of the existing quarry, and south of No 2 Side Road, across from the existing quarry. An aerial view of the existing quarry location is shown in **Figure 1**. A site plan for the proposed extension is shown in **Figure 2**.

Figure 1: Aerial view of the quarry area (© Google Earth, 2018).

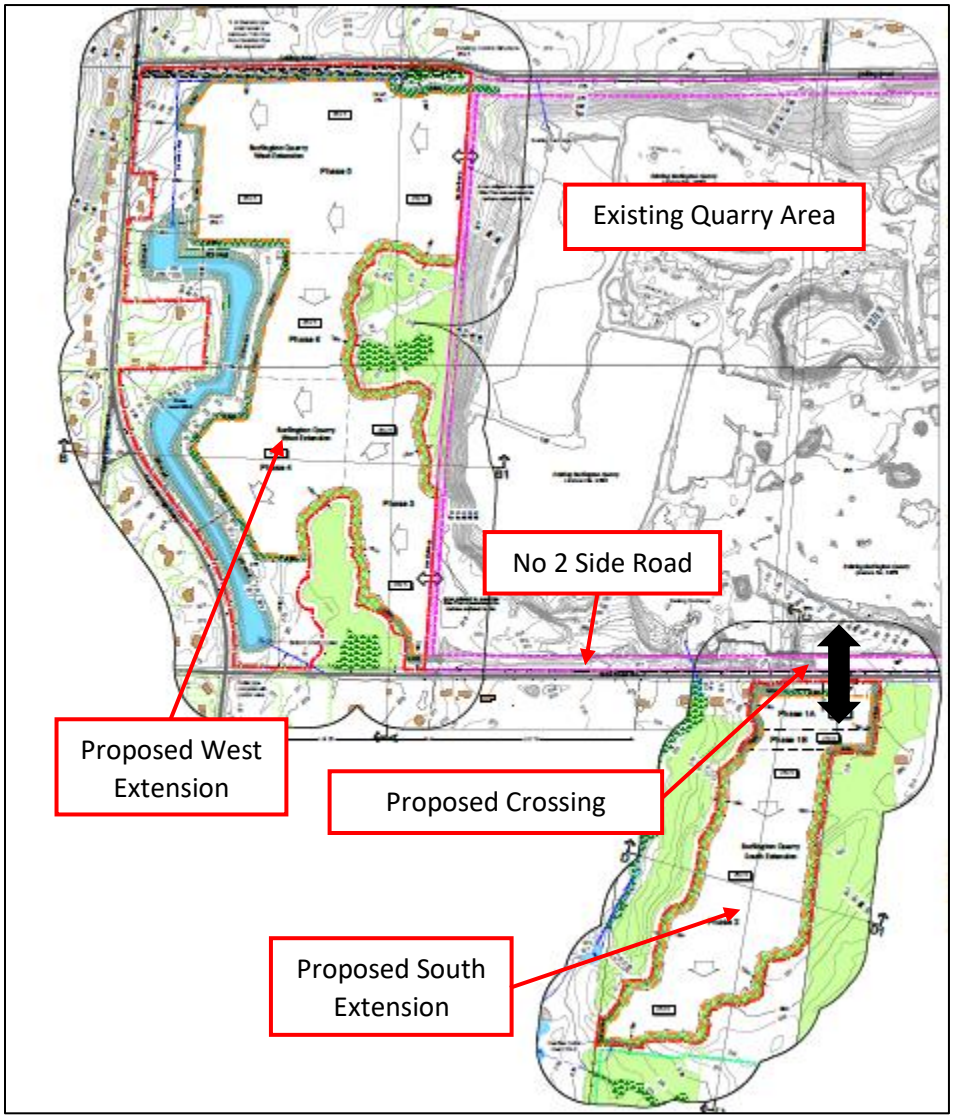


Figure 2: Site plan showing the existing quarry and proposed extensions and crossing (MHBC)[2].

Primary access to the west quarry extension will be through the existing quarry. Primary access to the south quarry extension will be through the proposed crossing, which will cross No 2 Side Road at grade approximately 300 m west of the existing quarry administrative access. The proposed accesses will be stop-controlled. **Figure 2** shows the proposed crossing.

The scope of our review included the existing accesses and the at-grade intersection of the proposed crossing and No 2 Side Road.

[2] Nelson Aggregate Co. Burlington Quarry Extension Operational Plan, MHBC Planning Urban Design & Landscape Architecture, April 2020.

2.0 ASSESSMENT

2.1 No 2 Side Road Function and Speed

No 2 Side Road is a rural two-lane collector under the jurisdiction of the City of Burlington. It is a paved roadway with 60 kilometre per hour (km/h) posted speed limit. The pavement was observed to be in fair condition, with areas in poor condition, as shown in **Figure 3**. Some pavement edge drop offs were also observed, particularly on the south shoulder between the existing truck access and the intersection of No 2 Side Road and Guelph Line, as shown in **Figure 4**. Pavement markings were present but faded in areas.

Typically, common practice is to assume a 'design speed' (a road design parameter) of 10 to 20 km/h over the posted speed limit for a paved roadway. The design speed is applied in decision-making regarding the appropriate road design features (i.e., road/shoulder widths, horizontal curves, and vertical curves) and traffic control devices. Based on the character and nature of No 2 Side Road and our visual observations, a design speed of 70 km/h would be appropriate.

Figure 3: Example of poor pavement conditions on No 2 Side Road (TNS, 2021).

Figure 4: Example of pavement edge drop-off conditions on No 2 Side Road (TNS, 2021).

The most recent five-year collision history for No 2 Side Road between Guelph Line and Cedar Springs Road was obtained from the City of Burlington, and provided in **Appendix A**. The collision history showed one collision: a single motor vehicle collision, where a westbound pick-up truck ran off the road in clear, dry and dark conditions in August 2017.

2.2 Existing Truck Access

The existing truck access is located on the north side of No 2 Side Road, approximately 350 m west of the intersection of No 2 Side Road and Guelph Line. It currently serves as the primary access to the property for inbound and outbound truck trips. No changes are proposed to this access and it will remain the primary access for inbound and outbound truck trips. It will also serve as the access to the office building as the administrative access will be closed.

When conducting intersection assessments, consideration must be given to intersection capacity, gap availability and selection, and available sight distances. Sight distance requirements must be considered for vehicles approaching a stop-controlled condition ('approach sight distance') and for vehicles departing from the stop location into the intersection ('departure sight distance'). Intersection capacity has been addressed in the Paradigm report.

2.2.1 Access Configuration

The existing truck access is stop-controlled, with one lane per direction on all approaches. Pavement widths differ for each approach, as shown on **Figure 5**. The access also includes a large turning radius on the east side. The pavement on No 2 Side Road is also wider on the east side of the access, towards Guelph Line. **Figure 6** shows that southbound trucks turning left onto No 2 Side Road use the additional width provided on the east leg, as shown by sand accumulating on the south side of the road. **Figure 7** shows that even with the larger access pavement width at the edge of No 2 Side Road, some trucks encroach upon the northeast shoulder.

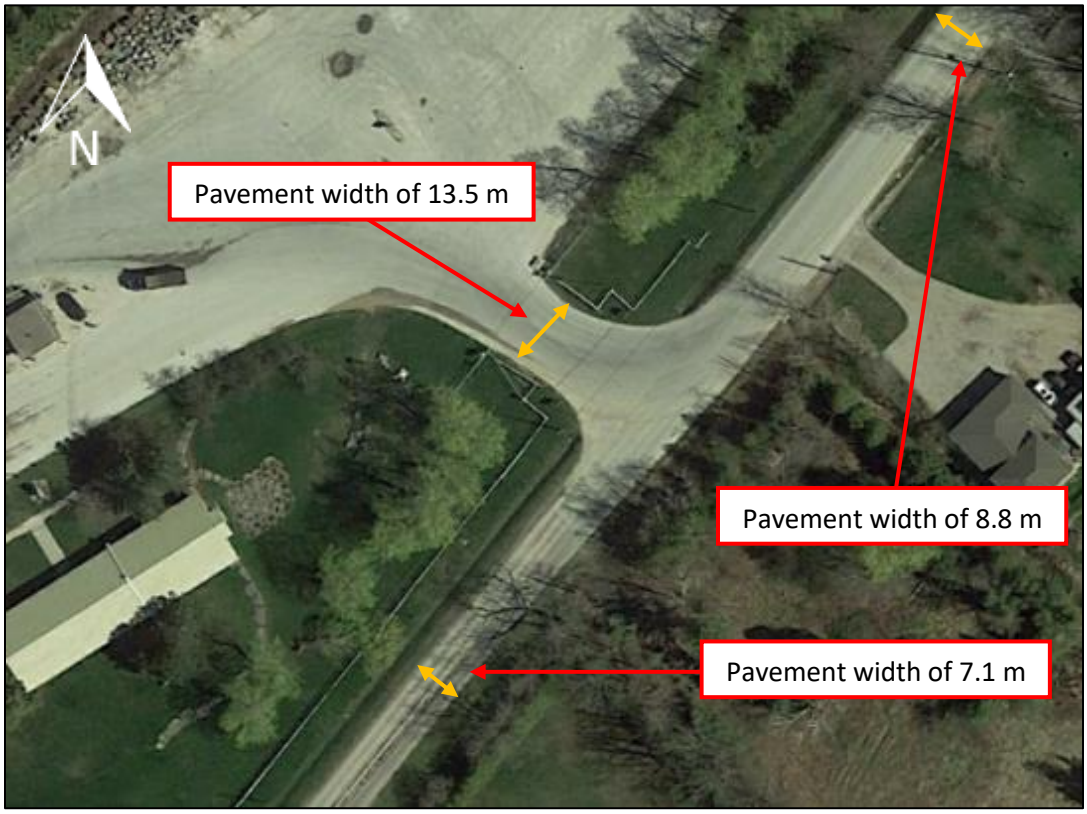


Figure 5: Pavement widths around the existing truck entrance (© Google, 2018)

Figure 6: Sand placement showing the path used by trucks turning left onto No 2 Side Road from the existing truck access (TNS, 2021).

Figure 7: Tire tracks on the shoulder at the northeast corner of the existing truck access and No 2 Side Road location (TNS, 2021).

2.2.2 Intersection Capacity and Gap Selection

The Paradigm report provides intersection capacity analyses of the existing operations at the existing truck access and No 2 Side Road. It shows that the existing truck access is currently operating, and expected to continue operating, well within capacity and with minimal delays at the access.[3]

Based our field observations, there are currently ample gaps in No 2 Side Road traffic for trucks and passenger vehicles to access the roadway.

2.2.3 Stopping Sight Distance

The Transportation Association of Canada (TAC) *Geometric Design Guide for Canadian Roads*[4] (the 'TAC Guide') recommends a minimum stopping sight distance of 105 m and a decision sight distance (stopping conditions) of 125 m for a rural roadway with a design speed of 70 km/h. The decision sight distance should be provided where feasible, and the stopping sight distance should be provided along any roadway to allow drivers to quickly come to a stop if necessary. Stopping and decision sight distances are available along No 2 Side Road, on both approaches to the existing truck driveway.

2.2.4 Approach Sight Distance

The approach sight distance (shown in **Figure 8**) is the sight triangle formed by the position of two opposing vehicles at a hypothetical position 3.0 seconds before they would impact each other, with the vehicle on the through road travelling at the prevailing operating speed (70 km/h design speed) and the vehicle on the side road travelling at a fixed approach speed of 30 km/h. Sight triangle requirements at stop-controlled intersections are intended to provide each vehicle 3.0 seconds of visibility of another vehicle prior to a potential impact. The sight triangle must be clear of visual obstructions so that the vehicles can see each other clearly within that triangle. At the existing truck access and No 2 Side Road location, the required sight triangle across the northeast and northwest corners would be from a distance of 25 m (existing truck access) and 50 m (No 2 Side Road) back from the point of impact for the respective vehicles.

[3] Nelson Aggregate Company Burlington Quarry Extension Traffic Report, Paradigm Transportation Solutions Limited, February 2020.
[4] Geometric Design Guide for Canadian Roads, Transportation Association of Canada, 2017, Chapter 9.8.

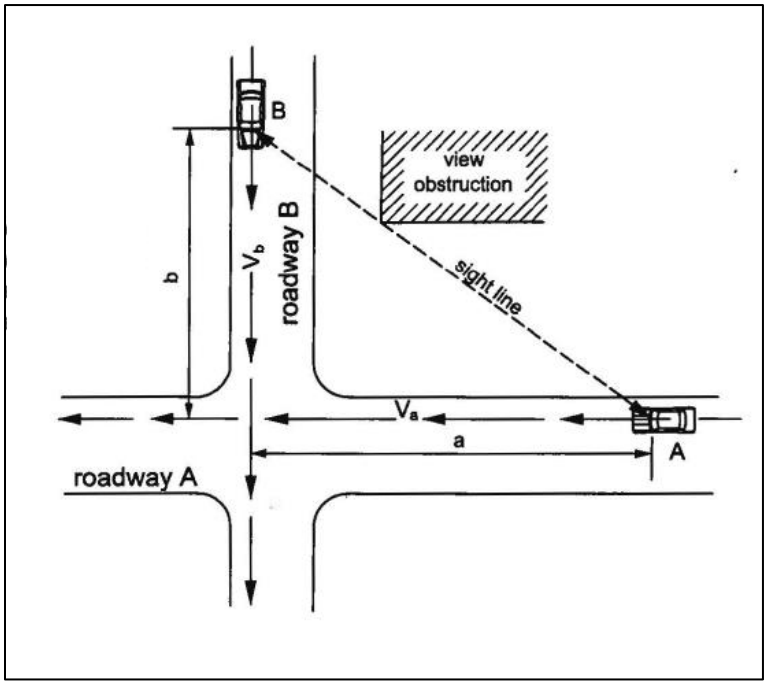


Figure 8: Illustration of an approach sight triangle at a stop-controlled intersection (Figure 2.3.3.1, TAC,[5] 1999).

Based on our field measurements, the recommended approach sight distance was available to both eastbound and westbound vehicles on No 2 Side Road, who would be able to observe a southbound truck or passenger vehicle leaving the quarry. It should be noted that a white fence is present within that triangle. The fence does not obstruct the view of a truck but may partially obstruct the view of a passenger vehicle. Consideration should be given to maximize the approach sight distances if any work is completed in the area. Given the nature of the access ('T' intersection) and the users (drivers familiar with the access), the risk of southbound traffic disregarding the stop sign is low.

2.2.5 Departure Sight Distance

From a stopped position on the existing truck access, a motorist must have sufficient sight distance along the major roadway (No 2 Side Road) to select a gap in order to enter the traffic stream without significantly impeding traffic flow. The TAC Guide [6] recommends departure sight distances, shown in **Figure 9,** for left and right turn movements.

[5] Geometric Design Guide for Canadian Roads, Transportation Association of Canada, 1999, Figure 2.3.3.1.
[6] Geometric Design Guide for Canadian Roads, Transportation Association of Canada, 2017, Chapter 9.8.

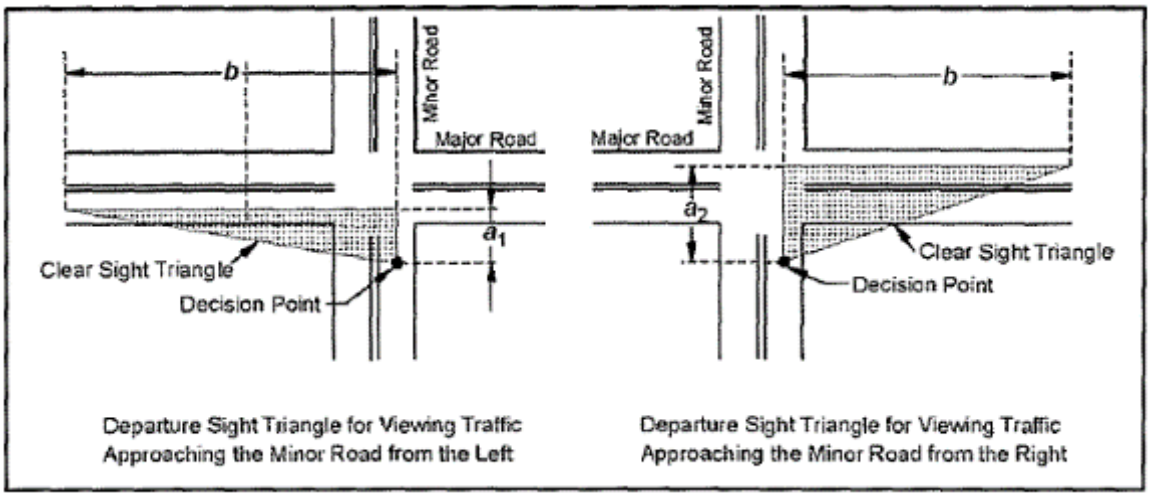


Figure 9: Illustration of departure sight distances (Figure 9.9.2, TAC,[7] 2017)

Governing sight distances were calculated for right- and left-turn movements onto a two-lane road section with a 70 km/h design speed, following the methodology presented in the TAC Guide.[8] Calculations were completed using the combination truck time gap values to account for the trucks leaving the quarry. Recommended sight distances at the existing truck access were calculated to be 225 m to the right and 205 m to the left. The observed available sight lines exceed those values. Recommended sight distances for passenger vehicles are shorter than those for combination trucks and are therefore also provided.

2.3 Existing Administrative Access

The existing administrative access is located approximately 490 m west of the intersection of No 2 Side Road and Guelph Line. This access is used by light vehicles accessing the office building on site.[9] The administrative access will be closed, and access to the office building will be provided through the existing truck access.

2.4 Proposed Crossing of No 2 Side Road

2.4.1 Crossing Configuration

The at-grade crossing will form a four-leg intersection with No 2 Side Road, where each leg will have one lane per direction. It is also expected that the north and south approaches will be directly aligned with each other on either side of No 2 Side Road. The north and south approaches will be stop controlled.

The proposed crossing will be located on the crest of the vertical curve, approximately 300 m west of the administrative access. This section evaluates the proposed crossing of

[7] Geometric Design Guide for Canadian Roads, Transportation Association of Canada, 2017.
[8] Geometric Design Guide for Canadian Roads, Transportation Association of Canada, 2017.
[9] Nelson Aggregate Company Burlington Quarry Extension Traffic Report, Paradigm Transportation Solutions Limited, February 2020.

No 2 Side Road located between the existing driveways to properties located at #2316 and #2330 No 2 Side Road, as shown on Figure 5.1 of the Paradigm Report[10].

2.4.2 Intersection Capacity and Gap Selection

Paradigm provided intersection capacity analyses of the future operations at the proposed crossing of No 2 Side Road.[11] The analysis shows that the proposed crossing is expected to operate well within capacity and with minimal delay.

Based our field observations, there are currently ample gaps in No 2 Side Road traffic for trucks to cross at the proposed crossing.

2.4.3 Stopping Sight Distance

The TAC Guide[12] recommends a minimum stopping sight distance of 105 m and a decision sight distance (stopping conditions) of 125 m for a rural roadway with a design speed of 70 km/h. The decision sight distance should be provided where feasible, and the stopping sight distance should be provided along any roadway to allow drivers to quickly come to a stop if necessary. Stopping sight distances to an object at a height of 0.38 m are available along No 2 Side Road, on both approaches to the proposed crossing. Decision sight distances are available in the eastbound direction to an object at a height of 0.38 m and in the westbound direction to an object at a height of 1.15 m.

2.4.4 Approach Sight Distance

Based on our field measurements, eastbound and westbound vehicles on No 2 Side Road had a generally unhindered approach sight distance to the proposed location for the crossing. The availability of the approach sight distance will however depend on the design of the north and south approaches. The north and south crossing approaches should be designed and constructed to provide an approach sight distance (i.e., visibility triangle) extending, as a minimum, 25 m on each crossing approach to a point 50 m east and west on No 2 Side Road, as shown on **Figure 12**.

It should be noted that berms will be installed parallel to No 2 Side Road to the west of the crossing and perpendicular to No 2 Side Road to the east of the crossing, as shown on Figure 11. Based on their proposed locations, the presence of these berms is not expected to hinder the approach sight distances at the crossing.

[10] Nelson Aggregate Company Burlington Quarry Extension Traffic Report, Paradigm Transportation Solutions Limited, February 2020.
[11] HCM Unsignalized Intersection Capacity Analysis, Crosstraffic, Paradigm Transportation Solutions Limited. Undated.
[12] Geometric Design Guide for Canadian Roads, Transportation Association of Canada, 2017.

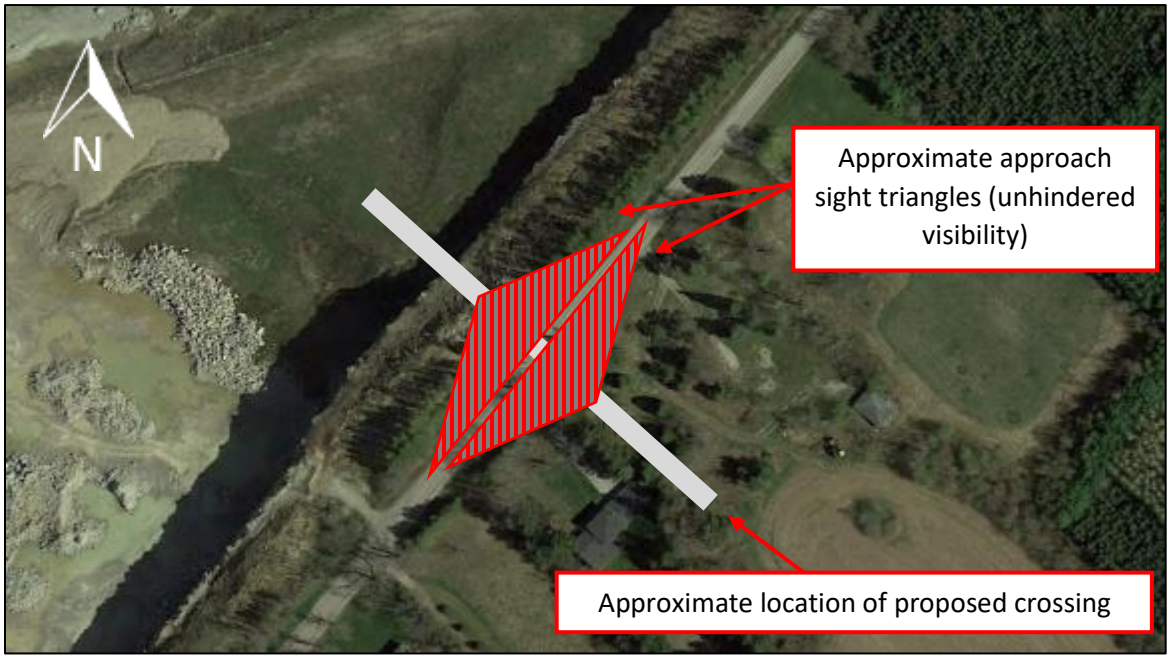


Figure 10: Approximate location of crossing and approach sight triangles (© Google, 2018)

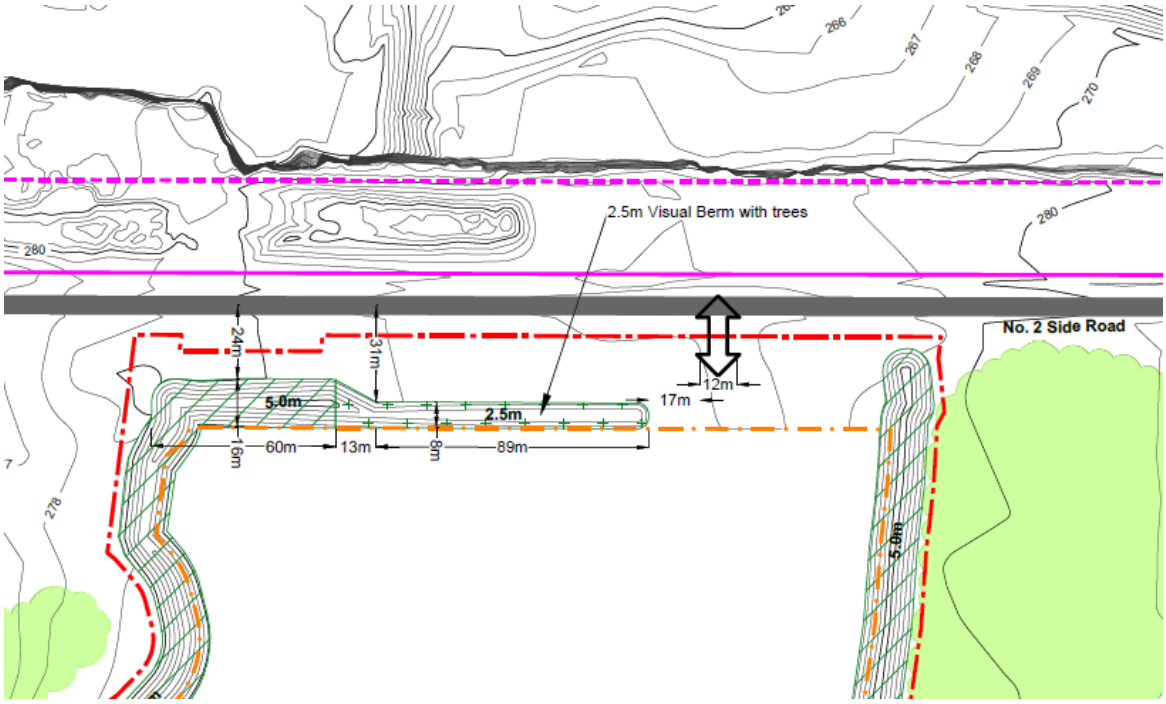


Figure 11: Location of proposed berms and crossing (MHBC)[13].

[13] Nelson Aggregate Co. Burlington Quarry Extension: South Extension – Berm Details, MHBC Planning Urban Design & Landscape Architecture, June 2021.

2.4.5 Departure Sight Distance

The proposed crossing will serve crossing movements for 70-tonne rock trucks.[14]

TNS reviewed the calculations presented in the Paradigm report for the crossing sight distance. Following the same methodology and accounting for CAT 775 70-tonnes rock trucks as specified in Section 5.2.1 of the Paradigm Report,[15] TNS calculated a recommended sight distance of 220 m in each direction for the 70-tonnes trucks.

For passenger vehicles, recommended sight distances for crossing, right- and left-turn movements onto a two-lane road section with a 70 km/h design speed are 150 m to the right and 130 m to the left, according to the TAC Guide.[16]

A summary of sight distance observations taken from the edge of the roadway at the proposed crossing location is included in **Table 2**.

Table 2: Summary of sight distance observations at the proposed crossing.

Location	Passenger Vehicle Eye height of 1.08 m		Quarry Design Vehicle Eye height of 1.65 m[17]	
	Top of vehicle	Headlights/ Taillights	Top of Vehicle	Headlights/ Taillights
North Side of No 2 Side Road				
Looking East	Visible	Not constantly visible	Visible	Visible
Looking West	Visible	Not constantly visible	Visible	Visible
South Side of No 2 Side Road				
Looking East	Visible	Not constantly visible	Visible	Visible
Looking West	Visible	Not constantly visible	Visible	Visible

The observed available sight distances, taken from the edge of the pavement on the north and south sides of No 2 Side Road, were below the recommended sight distances for an eye height of 1.08 m due to the nature of the vertical curve, but were greater than the recommended sight distances for an eye height of 1.65 m.

The crossing will be primarily used by CAT 775 70-tonnes trucks, which have a driver eye height estimated to be approximately 3 m, which is well above the 1.65 m eye position

[14] Nelson Aggregate Company Burlington Quarry Extension Traffic Report, Paradigm Transportation Solutions Limited, February 2020.
[15] Nelson Aggregate Company Burlington Quarry Extension Traffic Report, Paradigm Transportation Solutions Limited, February 2020.
[16] Geometric Design Guide for Canadian Roads, Transportation Association of Canada, 2017.
[17] Eye height of TNS employee who completed the site visit.

applied in the field assessment. Drivers in these trucks would have available sight distances of oncoming traffic along No 2 Side Road greater than the recommended 220 m.

Some passenger vehicles associated with the quarry may also occasionally use the proposed crossing. Using a conservative eye height of 1.08 m, these drivers would have the following visibility:

- Oncoming vehicles along No 2 Side Road would be fully visible while at a distance greater than recommended sight distances.
- As the oncoming vehicles approach the vertical curve, a driver on the proposed crossing would continue to have visibility of the top of the oncoming vehicles but would not have constant visibility of the headlights of the oncoming vehicles due to a localized dip in the vertical alignment.
- As the oncoming vehicles continue to approach the crest of the vertical curve, their headlights would become visible again to a driver on the proposed crossing. For eastbound vehicles, this would occur as they are approximately 125 m from the proposed access road. For westbound vehicles, this would occur as they are approximately 100 m from the proposed access road.[18]

In these cases, the passenger vehicle on the proposed crossing would be visible to drivers along No 2 Side Road for a distance greater than the required stopping and decision sight distances, requiring a moderate speed reduction to allow the occasional left or right turn passenger vehicle to attain free flow speeds. The probability of these instances occurring will be very low and will require the main road vehicle to temporarily adjust its speed below the design speed, as opposed to representing a collision risk.

It should be noted that berms will be installed parallel to No 2 Side Road to the west of the crossing and perpendicular to No 2 Side Road to the east of the crossing, as shown on Figure 11, above. Based on their proposed locations, the presence of these berms is not expected to hinder the departure sight distances at the crossing.

[18] These distances will vary slightly based on the exact location of the proposed crossing.

3.0 CONCLUSIONS

This report addresses the existing truck and administrative accesses and a proposed crossing of No 2 Side Road located between the existing driveways to properties located at #2316 and #2330 No 2 Side Road, as shown on Figure 5.1 of the Paradigm Report[19].

Our assessment indicates that the existing truck and administrative accesses should continue to operate efficiently and safely with the proposed quarry extensions. A review of collisions history has shown no reported access-related collisions in the recent past. Our assessment also indicates that the proposed crossing should operate efficiently and safely once constructed. All quarry accesses are also expected to operate with an acceptable level of service, allowing for ample gaps for vehicles crossing or turning onto No 2 Side Road.

The following remedial actions should be considered to ensure ongoing safety:

- The proposed crossing location should be constructed and maintained to provide the appropriate approach sight triangles and departure sight distances for a 70 km/h design speed. Vegetation should be trimmed or removed as necessary during construction to provide the recommended approach sight triangles and departure sight distances in all four quadrants.
- TRUCK ENTRANCE warning signs should be installed on the approaches to the proposed crossing to warn drivers along No 2 Side Road of the possible presence of slow-moving trucks crossing the intersection.
- Regulatory or information signs should be installed prohibiting the general public from using the proposed crossing.
- Vegetation should be maintained to ensure the approach sight distances at all accesses are provided.
- Based on the existing conditions, the municipality may wish to revisit the frequency of maintenance for pavement markings, shoulder grading and pavement condition along No 2 Side Road.

[19] Nelson Aggregate Company Burlington Quarry Extension Traffic Report, Paradigm Transportation Solutions Limited, February 2020.

APPENDIX A

Five-Year Collision History for No 2 Side Road

Collision Details Report

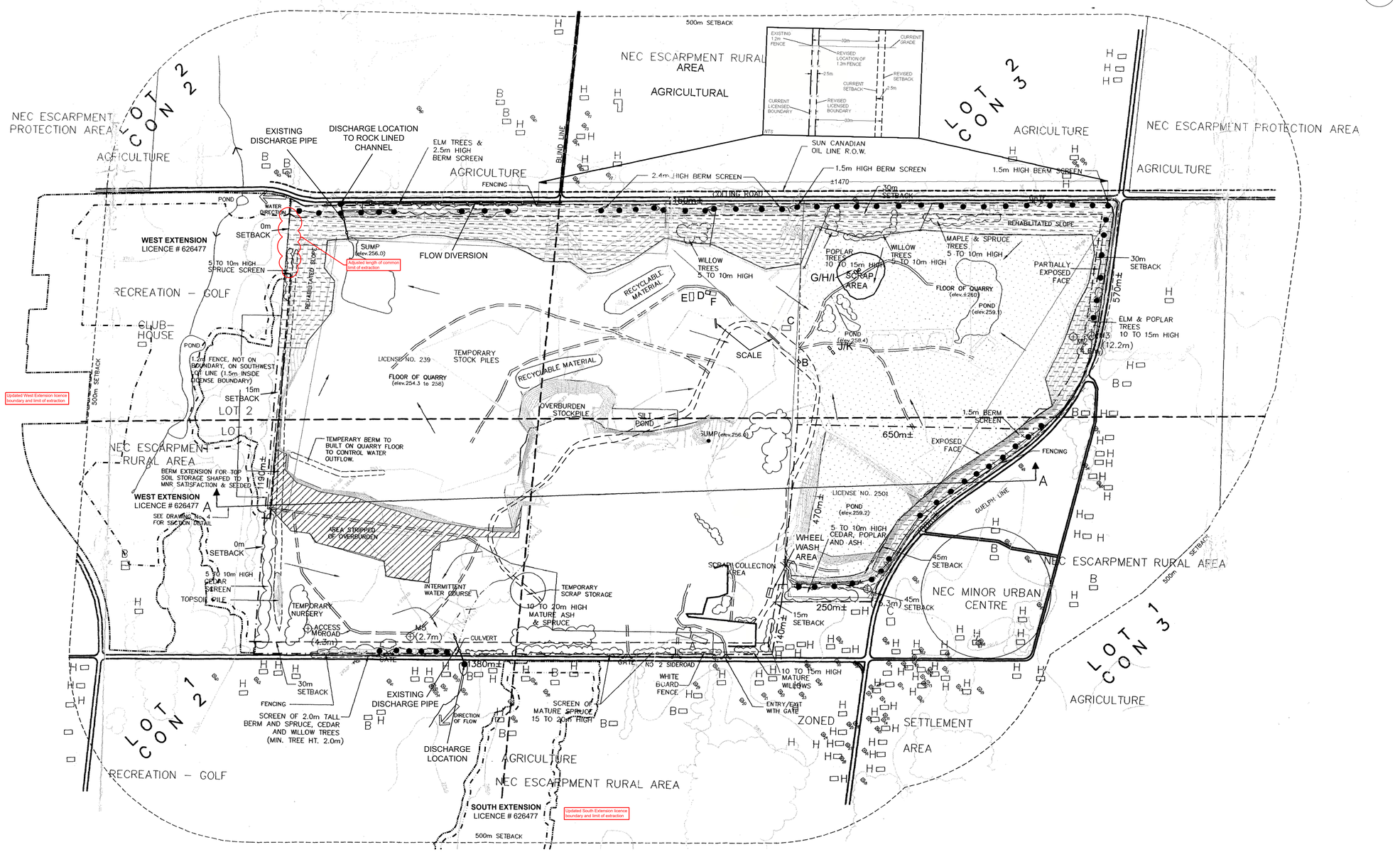
From: **To:**

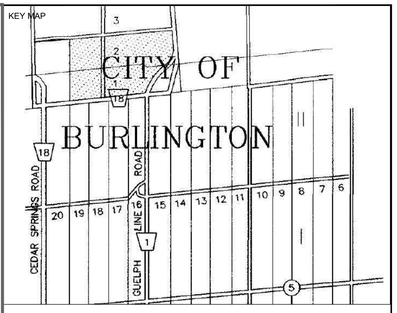
Location ..... NO 2 SDRD btwn CEDAR SPRINGS RD & GUELPH LINE **Municipality.....** Burlington

Traffic Control.... No control **Total Collisions....** 1

Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuver	Vehicle type	First Event	Driver Action	Light
17-275496	2017-Aug-13, Sun,04:27	Clear	SMV other	P.D. only	West	Dry	Going ahead	Pick-up truck	Ran off road	Lost control	Dark
Comments:						Dry					

Tab **4**





SITE DESCRIPTION AND STATISTICS

PT. LOTS 1 & 2, CONC. 2 & 3
CITY OF BURLINGTON
REGIONAL MUNICIPALITY OF HALTON

	LICENSED AREA (ha)
LICENCE NO. 5499	202.1
LICENCE NO. 5657	16.2
TOTAL	218.3
TOTAL AREA TO BE EXTRACTED (both licenses)	215 ~~211~~ ha

BUILDINGS WITHIN QUARRY BOUNDARY

A	OFFICE	40mX15mX5m
B	PORTABLE SCALE HOUSE	15mX7m
C	FUEL PUMPS	30mX10mX4m
D	LUNCH ROOM	5mX5mX5m
E	ASPHALT PLANT	120mX30mX15m
F	ASPHALT CONTROL ROOM	30mX15mX8m
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

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

All distances on this plan are shown in metres unless otherwise stated.

Site Plan Amendments

No.	Date (YY/MM/DD)	Description	By
10	19/07/14	REMOVAL/RELOCATION OF BUILDINGS/STRUCTURES ON-SITE	L.H.
9	12/01/20	REVISE FUEL STORAGE NOTE #8 ON PAGE 2 OF 4	L.H.
8	07/12/03	REVISE INTERNAL DYKE	L.H.
7	06/11/02	REDUCTION OF LICENSED BOUNDARY	L.H.
6	06/09/18	REVISE LOCATION OF SCRAP AREA	L.H.
5	98/10/26	ADDITIONAL RECYCLABLE MATERIAL STORAGE	P.C.
4	97/03/05	REVISED AS PER MINISTRY COMMENTS	P.C.
3	93/06/15	REVISED AS PER MINISTRY COMMENTS	K.C.
2	92/10/16	REVISED AS PER CLIENT COMMENTS	G.M.
1	92/10/08	REVISED PLANS AS PER MNR COMMENTS	CHARGES

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
113 COLLIER STREET BARRIE, ON, L4M 1H2 | P: 705 728 0045 F: 705 728 2010 | WWW.MHBCPLAN.COM

Stamp

MHBC PLANNING DRAFTED SITE PLAN AMENDMENTS NO. 6 TO 10

DRAFT

Mr. Brian Zeman is authorized by the Ministry of Natural Resources and Forestry to prepare and certify site plans for license applications.

Project

Burlington Quarry
Part of Lots 1 & 2, Conc. 2 & 3
(former township of Nelson) City of Burlington, Region of Halton

NELSON AGGREGATE CO.
2433 No. 2 Sideroad
P.O.Box 1078 Burlington Ont. L7R 4L8
phone: (905) 335-5250

Metres 0 50 100 200 250 — Plan Scale **1:4000**

Drawn By L.H./C.P. | File No. **9135N**
Checked By B.Z. | Date FEBRUARY 2022

File Name

EXISTING FEATURES

Drawing No.

1 OF 4

N:\Brian\9135O- Nelson - Project Sideways\Drawings\ARA Site Plans\Existing Site Plan\CAD\9135D - Existing - 1 of 4 - Existing Features.dwg

WELL INFORMATION

Key	M.O.E. No.(28–)	Elev.(m)	Static Elev.(m)	Key	M.O.E. No.(28–)	Elev.(m)	Static Elev.(m)	Key	M.O.E. No.(28–)	Elev.(m)	Static Elev.(m)
1	105	283.5	278.9	28	5572	283.5	276.8	55	488	277.4	276.5
2	99	281.9	277.4	29	124	278.0	276.6	56	496	277.4	277.4
3	101	281.9	277.4	30	5464	274.3	265.2	57	493	283.5	275.5
4	5454	286.5	277.4	31	126	274.3	271.0	58	5392	280.4	273.7
5	5461	283.5	274.3	32	125	274.3	272.8	59	5566	280.4	267.9
6	103	284.1	278.6	33	128	274.3	271.9	60	5463	280.4	272.8
7	5565	286.5	278.3	34	5110	274.3	266.4	61	4299	283.5	266.7
8	5391	288.0	280.4	35	5434	274.3	264.6	62	5460	283.5	274.3
9	5455	288.1	278.9	36	129	280.4	268.2	63	491	281.9	277.7
10	100	283.5	277.4	37	5564	283.5	270.7	64	494	283.5	278.9
11	5570	286.5	277.7	38	4172	280.4	276.3	65	495	283.5	278.9
12	5433	286.5	276.8	39	3696	280.4	269.4	66	492	283.5	274.6
13	4735	283.5	281.9	40	3646	271.3	268.8	67	3552	289.6	281.6
14	4859	282.2	278.9	41	5313	274.3	266.7	68	5738	286.5	274.3
15	102	281.6	278.0	42	137	272.2	268.5	69	5432	280.4	268.5
16	5714	286.5	279.2	42	5789	277.4	268.2	70	3143	283.5	281.3
17	5709	285.1	274.9	44	5622	277.4	273.7	71	5373	280.4	272.2
18	3015	281.9	280.7	45	5705	277.4	265.2	72	5109	278.9	268.8
19	5459	289.6	276.8	46	5569	280.4	275.2	73	497	279.8	270.4
20	115	275.6	272.8	47	490	277.4	259.1	74	2820	278.9	267.3
21	5588	280.4	272.2	48	487	277.4	275.2	75	5861	277.4	260.3
22	3115	280.4	278.0	49	486	281.0	275.5	76	3516	277.4	260.6
23	5706	283.5	276.5	50	5589	280.4	268.5	77	4229	280.4	263.7
24	5466	283.5	279.8	51	5713	280.4	269.1	78	5311	278.9	263.3
25	3230	280.4	276.8	52	4281	279.8	273.7	79	4744	278.0	263.7
26	110	281.0	279.8	53	489	277.4	276.5	80	3545	280.4	271.3
27	121	280.4	277.4	54	5550	280.4	272.8				

LEGEND:

- EXISTING SPOT ELEVATIONS
- EXISTING CONTOURS
- BOUNDARY OF LICENSED AREA
- SETBACK LIMITS
- EXISTING 1.2m FENCE ON BOUNDARY
- ENTRANCE GATES
- ACTIVE QUARRY FACE
- TREED AREAS/WOODLOTS/SCREENS
- HAUL ROUTES/INTERIOR ROADWAYS
- EXISTING WATER WELL(WITH KEY No.)
- M6 (10.5m) MONITORING WELL(WITH KEY No. and DEPTH TO WATER AS OF MARCH 30,1992)
- AREA STRIPPED OF TOPSOIL/OVERBURDEN
- SURFACE DRAINAGE
- EARTH BERM SCREEN
- REHABILITATED AREA
- INTERIM REHABILITATED AREA
- EXTENSION LICENCE BOUNDARY
- EXTENSION LIMIT OF EXTRACTION
- FLOW DIVERSION / DISCHARGE PIPE

Official Plan & Zoning Information:

As per the Niagara Escarpment Plan, which is included as part of the Halton Official Plan, Quarry Site is designated as a Mineral Resource Extraction Area. The designation of areas adjacent to the quarry is Escarpment Rural. The Official Plan for Halton Region designates the site as Mineral Resource Extraction Area.

Watertable Information:

The watertable is located approximately ±4.9m (269.0m ASL) below undisturbed grade. De-watering takes place continuously, and has been in place for approximately 50 years.

Fencing:

The licensed area is enclosed by a 1.2m fence with the exception of the area around the office which has a three rail wooden fence.

Site Description:

Part of Lots 1 and 2, Concessions 2 and 3, City of Burlington, Regional Municipality of Halton.

Information Compiled From

- 1990 Aerial Photography at 1:5000 Scale
- 1988 Official Plan for the Halton Planning Area, Regional Municipality of Halton
- 1985 Niagara Escarpment Plan
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- Rehabilitation contours utilized 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 (masl)
- On-site haul roads, stockpile locations, buildings and structures were updated based on July, 2020 aerial photography

MINISTRY OF NATURAL RESOURCES
AURORA DISTRICT
SITE PLAN APPROVED
Under the Aggregate Resources Act
Signature of MNR/RDER
DATE March 31/99

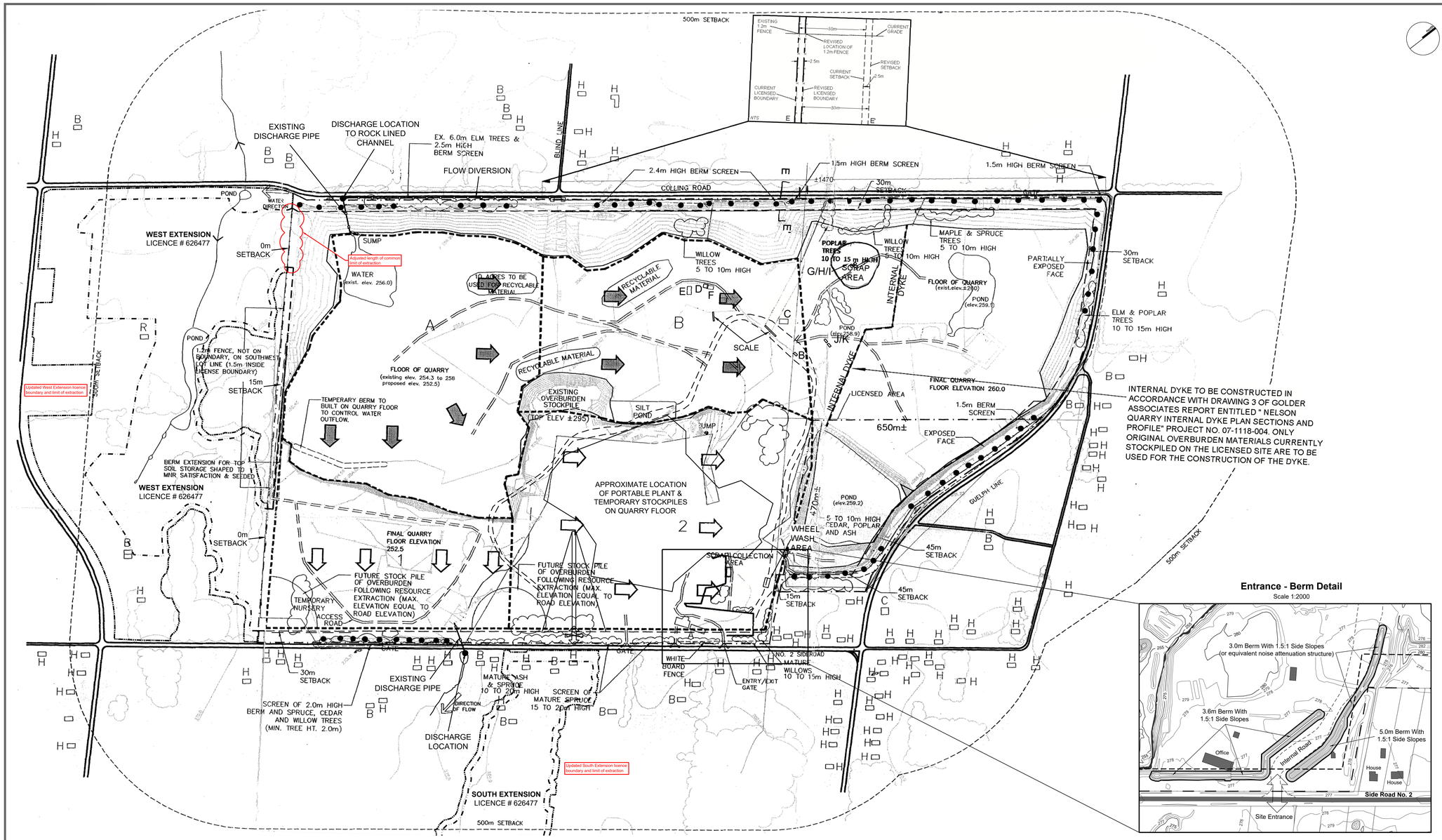
ORIGINAL SITE PLANS PREPARED BY:

REINDERS

F.J.Reinders and Associates Canada Limited
Architects, Engineers, Planners, Project Managers
BRAMPTON (416)457-1618

LICENSED PROFESSIONAL ENGINEER P.D.W. CHEUNG PROVINCE OF ONTARIO

DATE	PROJECT NO.	DRAWN BY	CHECKED
MAR.05/99	4792	C.G./S.B.	T.M.J.



Entrance - Berm Detail
Scale 1:2000

LEGEND

- EXISTING SPOT ELEVATIONS
- EXISTING CONTOURS
- BOUNDARY OF LICENSED AREA
- SETBACK LIMITS
- EXISTING 1.2m FENCE ON BOUNDARY
- ENTRANCE GATES
- ACTIVE QUARRY FACE
- TREED AREAS/WOODLOTS/SCREENS
- HAUL ROUTES/INTERIOR ROADWAYS
- AREA STRIPPED OF TOPSOIL/OVERBURDEN
- EARTH BERM SCREEN
- AGGREGATE STOCKPILE MAXIMUM HT. 20.0m
- 1 APPROXIMATE SEQUENCE OF EXTRACTION (UPPER LIFTS)
- A APPROXIMATE SEQUENCE OF EXTRACTION (LOWER LIFTS)
- APPROXIMATE BOUNDARY BETWEEN STAGES
- DIRECTION OF EXTRACTION
- DIRECTION OF EXTRACTION 2ND. LIFT
- EXTENSION LICENCE BOUNDARY
- EXTENSION LIMIT OF EXTRACTION
- FLOW DIVERSION / DISCHARGE PIPE
- PROPOSED ENTRANCE / EXIT WITH GATE

General Notes

Recycling Area:

1) This site plan specifies the additional storage size (10 acres) for recyclable materials,

2) 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),

3) This site plan specifies that this use only continues so long as the site is licensed.

Aggregate Extraction

1) 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 equal time period. Any major deviations from the operational sequence will require approval of the MNRF.

2) Topsoil and overburden will be removed approximately 100 to 200 metres in advance of aggregate extraction.

3) Phase 1 will be excavated in a single lift of (20-25m) down to the shale layer. A slot may be advanced southward in the centre of Phase 1. Extraction will occur simultaneously from the east, west and south faces within the slot and from the south face on either side of the slot opening.

4) Phase 2 will be extracted in an easterly direction in a single lift (20-25m) down to the shale layer.

5) As required, the existing processing plant will be removed and a new portable plant will be established on the quarry floor (as shown).

6) A section lift (+/- 5m) in areas A and B will be extracted down to the shale layer. Extraction may being in the northwest corner of the quarry floor and proceed simultaneously south and eastward this lift will be undertaken at the same time as phases 1 and 2.

7) This Plan permits aggregate extracted at the Burlington Quarry Extension to be transported on-site for processing and shipping. The Burlington Quarry South Extension will transport aggregate from an at-grade crossing on No. 2 Sideroad 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 final area to be extracted on-site is the southeast corner of Licence No. 5499 after the completion of extraction of the Burlington Quarry Extension.

8) Fuel storage tanks will be installed and maintained in accordance with the Liquid Fuels Handling Code under the Technical Standards and Safety Act.

On-site Operations

1) Existing equipment includes:

- Portable crushing plant
- Trucks and graders
- Loaders
- Hydraulic shovels
- And general equipment required to extract and ship aggregates

2) The processing of extracted materials shall occur between 7:00 and 19:00 only.

3) The loading and shipping of products may occur 24 hours.

4) The asphalt plant may operate 24 hours.

5) No drilling or extraction activities will occur within this quarry simultaneously with extraction activities within the Burlington Quarry Extension.

6) 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
Jaw Crusher	113
Cone Crusher (a set of two)	117
Screen Plant	123
Power Generator	109
Moving Haul Truck	114
Moving Highway Truck	101

7) Up to three haul trucks will be used to transport material from the Burlington Quarry Extension to the processing area, with a posted speed limit of 35 km/hr along this route.

8) Up to 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.

9) The asphalt plant will be equipped with noise control measures and operate within the conditions stipulated in the ECA issued by the MECP.

10) Equipment used for site preparation and rehabilitation shall satisfy the noise emission levels of the MECP guideline NPC-115, "Noise Construction Equipment".

11) Existing perimeter berms along the north, east and south property lines shall be retained and a new berm/acoustic barrier shall be constructed at the entrance/exit in the southeast corner of the site. See berm detail on this page.

Overburden and Topsoil

The existing terrain features along the north, east, and south property lines, including perimeter berms, will be maintained. Overburden and topsoil will be stripped prior to extraction and will be used for backfilling of selected slopes to affect the rehabilitation measures outlined on dwg No. 3 - Progressive and Final Rehabilitation Plans. Overburden stockpiles along No. 2 sideroad shall not be any higher than the existing road grade.

Water Discharge

Water discharge points are to remain as shown on dwg No.1 and may also include the flow diversion in the northwest corner of this Plan. Dewatering 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 Colling Road where it drains westward and to the southeast if the flow diversion is installed. The south discharge is to a ditch which crosses No.2 Sideroad and proceeds southward. Discharge of water will be in accordance with permits issued by the MECP.

Tree Planting

Tree planting and seeding of backfilled slopes will be conducted progressively as described in note #6 on dwg No. 3 - Progressive and Final Rehabilitation Plans. Should any tree planting or seeding fail to become established, replacement of trees or seeding will be conducted and maintained to ensure proper success rates.

Fencing

The licensed area is enclosed by a 1.2m fence with the exception of the area around the office and main site access area which has a three rail 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, A and B. These stockpiles will be removed as required as the operation enters into these areas. The proposed stockpiles associated with the portable processing plant will be located on the quarry floor within the processing area. (as shown on the plan)

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

Provision

Internal roads on quarry floor are temporary and can be relocated as required.

Variations from Control and Operation Standards

Section 0.13 Standard	Variation	Rationale
(3)(a)	The west licence boundary will not be fenced.	The west licence boundary abuts adjacent Licence # 626477 and additional land which are owned by the same licensee.
(1)1 & (1)2	Gates will not be required where haul roads cross the common boundary with the West Extension (Licence # 626477).	This will eliminate constraints to the movement of equipment between licences and access to additional lands owned by the same licensee.
(1)10.i	A 0 metre setback will be provided where the licence boundary abuts the West Extension (Licence # 626477).	This will enable material to be extracted along the common boundary and for rehabilitation to transition between licences.
(1)9 & (1)11	Excavation within the setback will occur to construct hydrological features and an access point for the South Extension.	Setbacks shall be temporarily excavated and disturbed to install diversion and discharge pipes as well as to construct an at grade roadway crossing on Side Road No. 2.
(1)13.i	Topsoil and overburden may be temporarily located within 30m of the West Extension (Licence # 626477).	The adjacent Licence # 626477 is owned by the same licensee.
(1)17 & (1)18	Topsoil and/or overburden may be transferred between this licence and the West and East Extensions (Licence # 626477).	This will allow stripped material from site preparation to be used immediately for progressive rehabilitation in other parts of this licence or the extensions.
(1)19.ii	Portions of the quarry face shall remain vertical.	Vertical faces above and below the final lake level will create a more diverse habitat and visually appealing rehabilitated landform.

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AURORA DISTRICT
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DISTRICT MANAGER
DATE March 31/99

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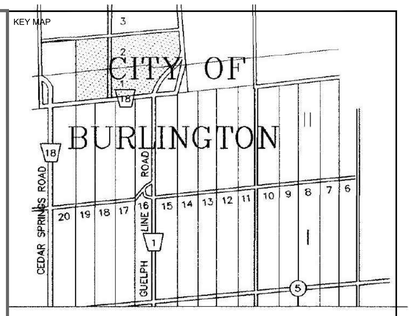
PROVINCE OF ONTARIO

DATE	PROJECT NO.	DRAWN BY	CHECKED
MAR.05/99	4792	C.G./S.B.	T.M.J.

KEY MAP



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

	LICENSED AREA (ha)
LICENCE NO. 5499	202.1
LICENCE NO. 5657	16.2
TOTAL	218.3
TOTAL AREA TO BE EXTRACTED (both licenses)	215 ~~211~~ ha

BUILDINGS WITHIN QUARRY BOUNDARY

A	OFFICE	40mX15mX5m
B	PORTABLE SCALE HOUSE	15mX7m
C	FUEL PUMPS	30mX10mX4m
D	LUNCH ROOM	5mX5mX5m
E	ASPHALT PLANT	120mX30mX15m
F	ASPHALT CONTROL ROOM	30mX15mX8m
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

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

All distances on this plan are shown in metres unless otherwise stated.

Site Plan Amendments

No.	Date (YY/MM/DD)	Description	By
10	19/07/14	REMOVAL/RELOCATION OF BUILDINGS/STRUCTURES ON-SITE	L.H.
9	12/01/20	REVISE FUEL STORAGE NOTE #8 ON PAGE 2 OF 4	L.H.
8	07/12/03	REVISE INTERNAL DYKE	L.H.
7	06/11/02	REDUCTION OF LICENSED BOUNDARY	L.H.
6	06/09/18	REVISE LOCATION OF SCRAP AREA	L.H.
5	98/10/26	ADDITIONAL RECYCLABLE MATERIAL STORAGE	P.C.
4	97/03/05	REVISED AS PER MINISTRY COMMENTS	P.C.
3	93/06/15	REVISED AS PER MINISTRY COMMENTS	K.C.
2	92/10/16	REVISED AS PER CLIENT COMMENTS	G.M.
1	92/10/08	REVISED PLANS AS PER MNR COMMENTS	CHANGES

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
113 COLLIER STREET BARRIE, ON. L4M 1H2 | P: 705 728 0045 F: 705 728 2010 | WWW.MHBCPLAN.COM

MHBC PLANNING DRAFTED SITE PLAN AMENDMENTS NO. 6 TO 10

Stamp

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Metres 0 50 100 200 250
Plan Scale **1:4000**

Drawn By L.H./C.P. File No. **9135N**
Checked By B.Z. Date FEBRUARY 2022

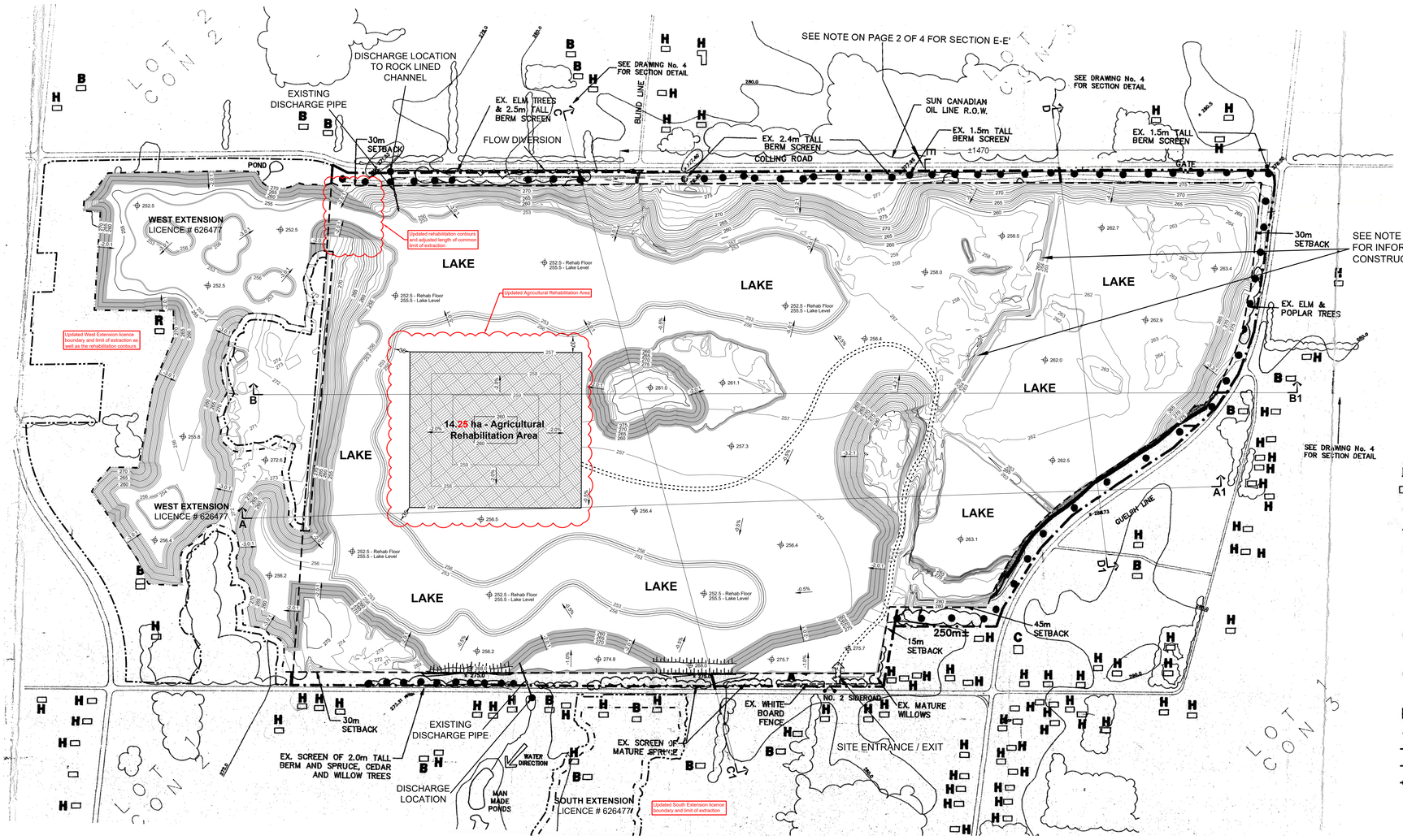
File Name

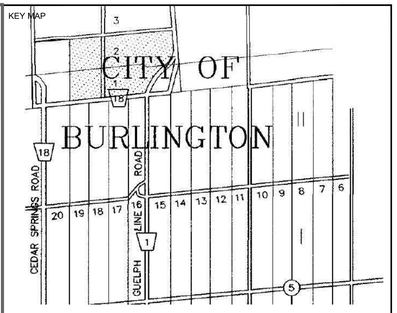
OPERATIONAL PLAN

Drawing No.

2 OF 4

N:\Brian\9135D- Nelson - Project Sideways\Drawings\ARA Site Plans\Existing Site Plan\CAD\9135D - Existing - 2 of 4 - Operational Plan.dwg





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LEGEND OF BUILDINGS WITHIN 500m OF QUARRY BOUNDARY

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

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MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
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Metres 0 50 100 200 250 Plan Scale **1:4000**

Drawn By	L.H./C.P.	File No.	9135N
Checked By	B.Z.	Date	FEBRUARY 2022

File Name

PROGRESSIVE & FINAL REHABILITATION PLAN

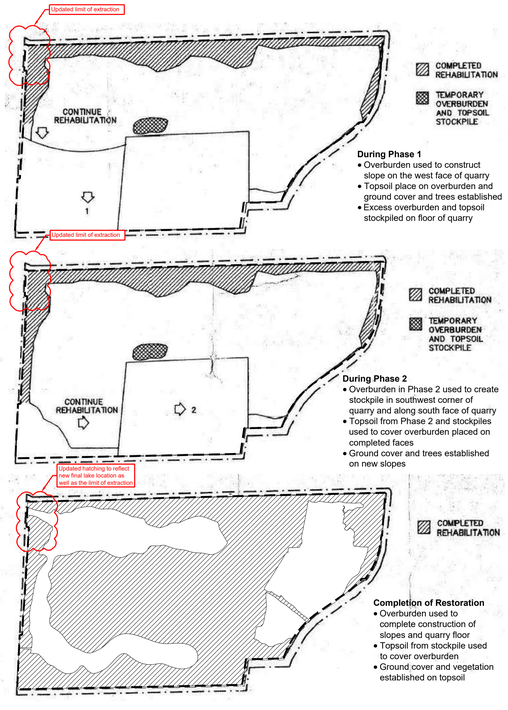
Drawing No.

3 OF 4

N:\Brian\9135D- Nelson - Project Sideways\Drawings\ARA Site Plans\Existing Site Plan\CAD\9135D - Existing - 3 and 4 of 4 - Rehabilitation Plan and Cross Sections.dwg

LEGEND:

- GENERAL DIRECTION OF REHABILITATION
- BOUNDARY OF LICENSED AREA
- SETBACK LIMITS
- EXISTING 1.2m POST & WIRE FENCE ON BOUNDARY
- 265.0 EXISTING CONTOURS
- 271.5 PROPOSED CONTOUR
- x 271.0 PROPOSED SPOT ELEVATION
- ACTIVE PIT FACE
- EXPOSED QUARRY FACE
- EXISTING TREES
- PROPOSED TREES
- EXISTING REHABILITATED AREA
- APPROXIMATE EDGE OF WATER
- EXTENSION LICENCE BOUNDARY
- EXTENSION LIMIT OF EXTRACTION
- FLOW DIVERSION / DISCHARGE PIPE
- x 256 FLOOR ELEVATION (MASL)
- 2.0:1 -1% FINAL GRADE AND SLOPE
- ENTRANCE / EXIT
- AGRICULTURAL REHABILITATION AREA
- INTERNAL ROAD



Rehabilitation Notes

1)

a) Final rehabilitation of the site is for a lake, ponds, ~~and~~ wetlands and agricultural area (see agricultural rehabilitation notes for additional detail) with vegetated slopes and quarry floor. The final rehabilitated landform may also include an access road from the entrance/exit to the rehabilitated quarry floor and access roads on the quarry floor to provide access to the sump locations.

b) Notwithstanding a) above, the owner reserves the right to develop the site for other uses, including estate residential, public and/or private recreational uses (ie: sports fishing, swimming and boating). Depending on the final ownership of the rehabilitated site, these shall be subject to all applicable legislation and by-laws.

c) In accordance with b) above, the licensee has committed to: conveying the site into public ownership and to maintain this quarry in a dewatered state by maintaining the pumping regime to provide long-term public water management benefits and mitigate impacts on natural heritage features which depend on quarry discharge from this license.

The contour shaping of the remaining areas to be rehabilitated, will be done in a manner to create a diverse waters edge. Areas where the waters edge meets a vertical quarry face will be blended into softer slopes and areas just under the waters surface will be created to establish the potential for naturally occurring wetland areas for fish and wildlife habitat. (See typical sketch on sheet 4).

2) Waste rock, overburden topsoil and any MECP approved excess soil will be used to develop suitable safe slope angles as shown. If insufficient overburden and topsoil exists on the site, the owner reserves the right to import excess soil from offsite sources.

3) Except for vertical faces, rehabilitated slopes of the quarry shall not exceed 2:1 and shall vary from 2:1 to 5:1 slopes. Tableland areas for development will be graded from 0.3% to 3.0% slope angles. The agricultural rehabilitation area will be graded to 2% slope angles. Where the agricultural rehabilitation area transitions back to the rehabilitated quarry floor, 15:1 slopes will be utilized to establish a smooth transition.

4) Islands may be left in the lake should sufficient material remain on the site at the completion of operations. The size of the island shown on the plan is approximate based on current earth quantities. The owner reserves the right to adjust the size depending on the final quantities.

5) In the final stages, the existing berms may be used in the final rehabilitation of the slopes.

6) Regraded slopes will be vegetated with a maintenance free ground cover (ie: trefoil, crown vetch) and deciduous and coniferous trees of varieties indigenous to the area. Installed heights for deciduous trees will be 2.0 metres and for coniferous trees will be 1.0 metre. Tree fatalities will be replaced at seasonally opportune times. Trees and shrubs will be planted for slope stabilization, habitat enhancement and aesthetics.

7) The regraded quarry floor will be vegetated with a grass legume mixture except within the agricultural area which shall be vegetated in accordance with the agricultural rehabilitation notes on this drawing.

8) For safety a post and wire fence must be installed at the top of all exposed quarry faces and shall run along the top to the point where the quarry face flares into the rehabilitated slope.

9) Phasing of rehabilitation to follow sketches shown above and as set out in dwg No.2.

10) If the site is to be maintained in a dewatered state, prior to the surrender of the Aggregate Resource Act Licence, the licensee shall define the transition of the site to another party and the pre-requisite for license surrender to the satisfaction of the MNRF.

Agricultural Rehabilitation

11) The Agricultural Rehabilitation Area identified on the plan view shall be established by importing topsoil and subsoil from Licence #626477 and following the Quarry Floor Agricultural Rehabilitation Sequence detail on this drawing. The configuration of the Agricultural Rehabilitation Area, as shown on the plan, may vary slightly to support agricultural uses on the site.

12) During operations, an access road to the agricultural rehabilitation area will be maintained that avoids the processing area. Once processing has been completed, the access road to the agricultural rehabilitation area will be in the general location as shown on the plan.

13) The soils transferred from Licence #626477 for agricultural rehabilitation will be used directly for rehabilitation where feasible. If storage is required, the agricultural soils will be stored in low profile stockpiles and appropriate erosion protection will be implemented. The intent is to shall avoid ~~substantial~~ storage of topsoil ~~and minimize storage of subsoil~~ material and where storage is required, it will be minimized to the extent possible.

14) Topsoil and subsoil shall be replaced at the same pre-extraction depth in Licence #626477 which is approximately 23 centimetres for topsoil and 36 centimetres for subsoil.

15) Soil material for agricultural rehabilitation shall not be handled during frozen conditions. The soil will only be handled under dry conditions and a wet weather shut down procedure shall be put in place. Travel over soils and rehabilitated areas shall be minimized to reduce compaction. Ripping / tilling the soil will occur where necessary to alleviate soil compaction and shall avoid the mixing of soil materials / layers during the process.

16) Vegetation cover (such as perennial crops) shall be established within the agricultural rehabilitation area in order to reduce erosion, add organic matter to the soil and improve soil structure. A grass-legume cover crop shall be established throughout rehabilitation and maintained for up to five years and ~~ploughed~~ incorporated under annually in order to promote and increase organic matter.

17) Plantings in agricultural areas shall include an agricultural seed mix of Annual Rye (50%), Oats (23%), White Rye (23%) and White Clover (4%).

18) The post-extraction land form shall be rehabilitated in a manner that alleviates compaction and minimizes the potential for erosion.

19) Random soil testing shall be completed at the beginning of each growing season by a qualified professional to analyze soil conditions, using an accredited lab for any analytical testing. Soil inspections shall be conducted at a density to allow for sufficient coverage of the area. The parameters for the soil testing shall be determined by the qualified professional and shall include items such as: soil macro and micronutrients, soil chemistry (e.g. pH, etc.), organic matter, soil texture and structure and bulk density. ~~to analyze soil fertility, structure and drainage.~~ Adjustments to cropping practices and/or soil amendments may be required based on the results of the soil testing.

20) An Agricultural Rehabilitation Monitoring Program Report shall be submitted annually by a qualified professional once progressive rehabilitation efforts have commenced within the agricultural rehabilitation area and five years following completion of rehabilitation in this area. The report shall document the stages of the rehabilitation process and include details on matters such as the following:

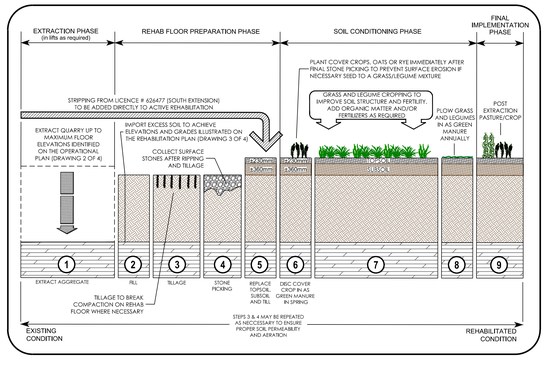
a) Evaluate the rehabilitated agricultural condition and soil capability, relative to the baseline soil conditions documented as a requirement of Licence #626477. The baseline soil conditions shall be included as an appendix in the annual monitoring report;
b) An overview of the status of the current extraction and progressive rehabilitation phases;
c) Description of annual soil removal and storage methods;
d) Description of any land that has been progressively rehabilitated;
e) Documentation on the alleviation of any soil compaction, drainage provisions, erosion control, etc.;
f) Description of how the soil has been replaced and any amendments added (fertilizer, organic matter)
g) Description of any seeding or planting that has occurred;
h) A review of previous rehabilitation management activities and observations regarding field conditions;
i) Report of agricultural activity (crops grown, annual yields) and any anecdotal feedback from the farmer;
j) Review of drainage issues and recommended mitigation measures as necessary;
k) Summary of soil test results and post rehabilitation soil capability; ~~and~~
l) Summary of monitoring data; and
m) Make recommendations on future agricultural rehabilitation activities and any needed adjustments to best management practices.

The report shall include observational documentation, records of activity and quantitative information on soil conditions. These reports will be appended as part of annual ARA Compliance Assessment Reports. The purpose of the annual monitoring report is to ensure the site will be rehabilitated to a condition in which substantially the same area and the same average soil capability for agriculture, relative to the baseline conditions in Licence #626477, are restored. ~~gather data on average soil capabilities to ensure the recommended rehabilitation sequence is implemented and documented.~~

21) No livestock operations shall be permitted.

22) Best management practices are encouraged with respect to the storage and application of fertilizers and pesticides.

QUARRY FLOOR AGRICULTURAL REHABILITATION SEQUENCE
N.T.S.

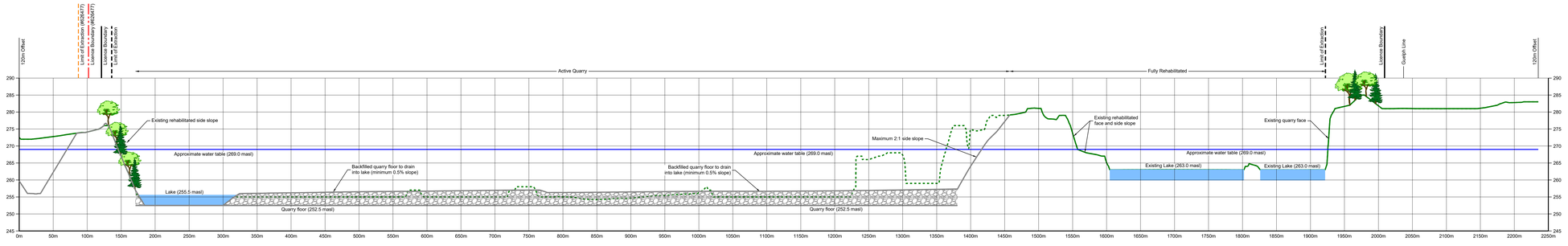


ORIGINAL SITE PLANS PREPARED BY:

REINDERS
F.J.Reinders and Associates Canada Limited
Architects, Engineers, Planners, Project Managers
(416)452-1618
BRAMPTON

DATE	PROJECT NO.	DRAWN BY	CHECKED
MAR.05/99	4792	C.G./S.B.	T.M.J.

MINISTRY OF NATURAL RESOURCES
AURORA DISTRICT
SITE PLAN APPROVED
Under the Aggregate Resources Act
DISTRICT MANAGER
DATE March 24/99



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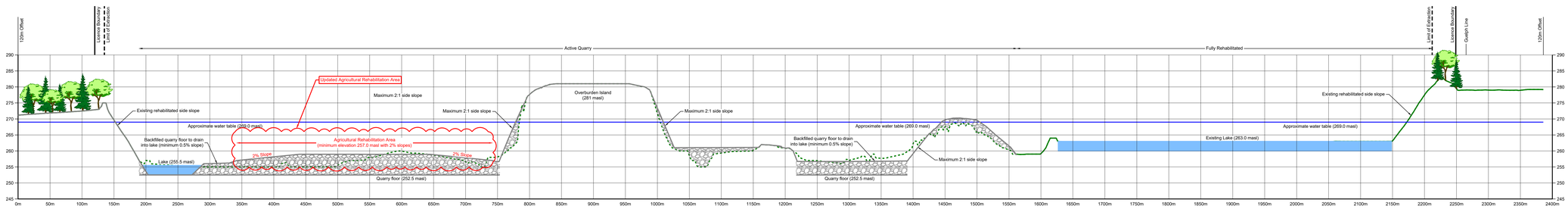

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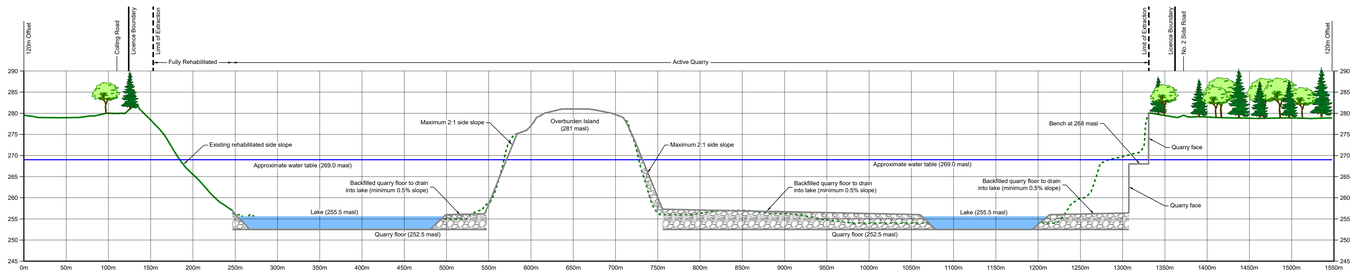

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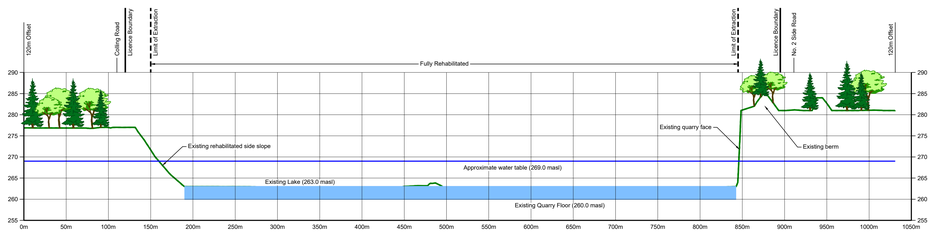

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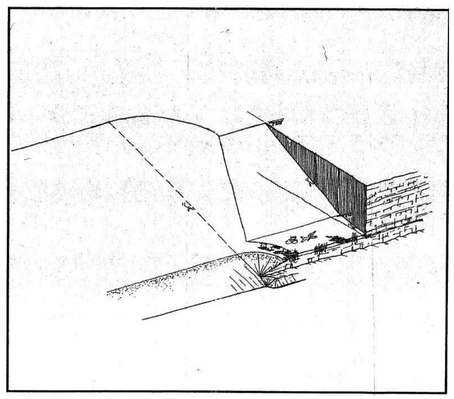


Information Compiled From

- 1990 Aerial Photography at 1:5000 Scale
- 1988 Official Plan for the Halton Planning Area, Regional Municipality of Halton
- 1985 Niagara Escarpment Plan
- Ministry of Environment, Water well records
- 1991 Reinders Field Survey
- Ontario Base Mapping (Air Photography 1982, Published 1983)
- 1985 Plans by Nelson
- 1997 Mark-Ups Provided by Nelson
- Rehabilitation contours utilized 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 (masl)
- On-site haul roads, stockpile locations, buildings and structures were updated based on July, 2020 aerial photography

MINISTRY OF NATURAL RESOURCES
AURORA DISTRICT
SITE PLAN APPROVED
Under the Aggregate Resources Act
for DISTRICT MANAGER
DATE March 31/99

ORIGINAL SITE PLANS PREPARED BY:

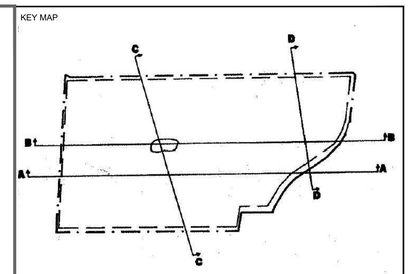
REINDERS

F.J.Reinders and Associates Canada Limited
Architects, Engineers, Planners, Project Managers
BRAMPTON (416)457-1618

P. C. W. CHEUNG
LICENSED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

DATE	PROJECT NO.	DRAWN BY	CHECKED
MAR.05/99	4792	C.G./S.B.	T.M.J.

KEY MAP



Legend

- Licence Boundary
- Limit of Extraction
- Licence Boundary (#626477)
- Limit of Extraction (#626477)
- 120m Offset From Licence Boundary
- Existing Grade - Removed / Altered
- Existing Grade - Undisturbed
- Quarry Floor / Face
- Backfilled
- Lake or Pond

All distances on this plan are shown in metres unless otherwise stated.

Site Plan Amendments

No.	Date (YY/MM/DD)	Description	By
10	19/07/14	REMOVAL/RELOCATION OF BUILDINGS/STRUCTURES ON-SITE	L.H.
9	12/01/20	REVISE FUEL STORAGE NOTE #8 ON PAGE 2 OF 4	L.H.
8	07/12/03	REVISE INTERNAL DYKE	L.H.
7	06/11/02	REDUCTION OF LICENSED BOUNDARY	L.H.
6	06/09/18	REVISE LOCATION OF SCRAP AREA	L.H.
5	98/10/26	ADDITIONAL RECYCLABLE MATERIAL STORAGE	P.C.
4	97/03/05	REVISED AS PER MINISTRY COMMENTS	P.C.
3	93/06/15	REVISED AS PER MINISTRY COMMENTS	K.C.
2	92/10/16	REVISED AS PER CLIENT COMMENTS	G.M.
1	92/10/08	REVISED PLANS AS PER MNR COMMENTS	JOHANSEN

MHBC
PLANNING
URBAN DESIGN
& LANDSCAPE
ARCHITECTURE
113 COLLIER STREET BARRIE, ON, L4M 1H2 | P: 705 728 0045 F: 705 728 2010 | WWW.MHBCPLAN.COM

Stamp

MHBC PLANNING DRAFTED SITE PLAN
AMENDMENTS NO. 6 TO 10

DRAFT

Mr. Brian Zeman is authorized by the Ministry of Natural Resources and Forestry to prepare and certify site plans for license applications.

Project

Burlington Quarry

Part of Lots 1 & 2, Conc. 2 & 3
(former township of Nelson) City of Burlington, Region of Halton

NELSON AGGREGATE CO.
2433 No. 2 Sideroad
P.O.Box 1070 Burlington Ont. L7R 4L8
phone: (905) 335-5250

Drawn By	L.H./C.P.	File No.	9135N
Checked By	B.Z.	Date	FEBRUARY 2022

File Name

CROSS SECTIONS

Drawing No.

4 OF 4

N:\Brian\9135D- Nelson - Project Sideways\Drawings\ARA Site Plans\Existing Site Plan\CAD\9135D - Existing - 3 and 4 of 4 - Rehabilitation Plan and Cross Sections.dwg