

A. General

- 1. This site plan is prepared under the Aggregate Resources Act (ARA) for a Class A licence for a quarry below the ground water table and follows the Aggregate Resources of Ontario: Site Plan Standards August 2020, specifically Operations for all sites (Numbers 33-56 in the standards).
- 2. Area Calculations: Licence Area: 55.9 hectares (138.1 acres) Limit of Extraction: 43.3 hectares (107.0 acres)
- 3. No more than 1,000,000 tonnes of aggregate shall be removed from this site in any calendar year.
- 4. An office/scale house, scale and fuel storage area will be located near Highway #41 as shown on the Sequence of Operations drawing on page 2 of 5. **These uses/facilities are located outside of the licence boundary.**
- 5. Based on the available groundwater elevation data, the predicted water table slopes down from the southeastern side of the site [BH21-02 (167.0 masl)] to the northwestern side of the site at BH21-03 (152.2 masl) from east to west across the site. The maximum predicted water table elevations are shown on each cross section.
- 6. Setbacks will be as shown and labelled on the Site Plans.
- 7. Source Water Protection: The site is not located within a Source Water Protection Area.

B. Hours of Operation

- 1. The quarry is permitted to operate on a 24 hour basis. Between 7am and 7pm, only the following equipment may operate: rock drill, wash plant and associated generator, mobile crushing plant (crusher) and associated generator, up to four loaders or excavators, highway trucks, and quarry trucks. Between 7pm and 7am, only the following equipment may operate: wash plant and associated generator, up to three loaders or excavators, and highway trucks. See also Section L 'Noise' for further details.

C. Site Access and Fencing

- 1. Initially, the site shall be accessed through the operational entrance/exit which is located along the south portion of the west boundary of the licence in Extraction Area 1 (not gated) as well as along both sides of the unopened road allowance (gated) as shown on the Sequence of Operations diagram on page 2 of 5. The access from Highway #41 further to the west will also be gated. Other non-operational entrance/exits along the boundary will be utilized for maintenance/access to setback areas. Access along the east licence boundary in Extraction Area 3 will be gated and used for passenger and emergency vehicles only. Internal haul routes may be relocated as needed.
- 2. The boundary of the site is not fenced (existing conditions), with the exception of the west limit of Extraction Area 2, along the TransCanada Pipelines Limited (TCPL) Right-of-Way. Portions of the licence boundary that cross the existing TCPL right-of-way will not be fenced. Fencing in these locations will follow the limit of extraction/setback. Also, there will be no fencing along the common boundary with Licence #604041 and the northwest portion of the licence where adjacent to Additional Lands to be Owned by Applicant (see Note M 'Variations from Control and Operation Standards'). Where there is no fencing, 1.2m marker posts will be installed that are visible from one to the other.
- 3. In Extraction Area 1, fencing of the Licensed Boundary will be completed prior to any disturbance taking place, including fencing along the TCPL Right-of-Way (also see Note E6 for fencing requirements along TCPL right-of-way). Fencing for Extraction Areas 2 and 3 will take place prior to any disturbance taking place in those Areas.

D. Drainage

- 1. Drainage of undisturbed areas will continue and be in the directions shown on the Existing Features drawing on page 1 of 5. Dewatering will occur via discharge from sump, in each Extraction Area, to ultimately outlet to the location along the northwest portion of Extraction Area 1 as shown on the Sequence of Operations drawing. Sumps may be relocated as needed.

E. Site Preparation

- 1. Prior to site preparation, a Spills Contingency Plan shall be developed to address any potential spills from equipment on-site.
- 2. Timber resources will be salvaged for use as saw logs, fence posts and fuel wood where appropriate. Non-merchantable timber, stumps and brush may be mulched for use in progressive rehabilitation. Excess material not required for uses mentioned above will be burned (with applicable permits).
- 3. Topsoil and overburden shall be stripped and stored separately in accordance with the Sequence of Operations diagram and associated notes on page 3-2 of 5.
- 4. Excess topsoil and overburden not required for immediate use in the construction of berms or rehabilitation, may be temporarily stockpiled inside the extraction area. Topsoil and overburden stockpiles shall be located within the limit of extraction and remain a minimum of 30 metres from the licence boundary (subject to O.Reg 244/ 97 Section 0.13 (1) 13i). Stockpiles will not exceed 20m in height.
- 5. Temporary topsoil and overburden stockpiles which remain for more than one year shall have their slopes vegetated to control erosion. Seeding shall not be required if these stockpiles have vegetated naturally in the first year.
- 6. During any construction activities in proximity of the TransCanada Pipelines Limited (TCPL) right-of-way, temporary fencing along the limits of TCPL's right-of-way must be installed and maintained to prevent unauthorized access onto the right-of-way with heavy equipment. The fence must meet TCPL specifications concerning type, height and location and must be maintained by the licensee. Written consent from TCPL must be obtained before any of the following:
 - a. Constructing or installing a facility across, on, along or under a TCPL pipeline right-of-way. A facility may include, but is not limited to: driveways, roads, access ramps, trails, pathways, utilities, berms, fences/fence posts ("Facility");
 - b. Conducting a ground disturbance (excavation or digging) on the TCPL's Pipeline Right-of-Way or within 30 metres of the centreline of TCPL's pipe (the "Prescribed Area");
 - c. Driving a vehicle, mobile equipment or machinery across a TCPL Pipeline Right-of-Way outside the travelled portion of a highway or public road;
 - d. Using any explosives within 300 metres of a TCPL's Pipeline Right-of-Way; and,
 - e. Use of TCPL's Prescribed Area for storage purposes.

F. Berms and Screening

- 1. Acoustic berms shall be constructed in Extraction Area 3 along the hydro easement as shown (see Sequence of Operations diagram and Phase Notes on page 2 of 5 for details).
- 2. An optional storage berm may be located in the western setback of Extraction Area 1.
- 3. See "Typical Acoustic Berm Detail" on page 2 of 5 for details relating to berm construction and will be vegetated and maintained to control erosion using a low maintenance grass/legume seed mixture (e.g. MTO Seed Mix) composed of Creeping Red Fescue, Perennial Ryegrass, Kentucky Bluegrass and White Clover. Temporary erosion control will be implemented as required.
- 4. Existing vegetation within the setbacks shall be maintained to extent possible where berms are to be located. Additional nodal plantings shall occur within setbacks as shown on the Rehabilitation Plan (page 4 of 5).

G. Extraction Sequence

- 1. The operational plan depicts a schematic operations sequence for this property. Phases do not represent any specific or equal time period and may be operated simultaneously. The direction of extraction will be in accordance with the Sequence of Operations diagram shown on page 2 of 5. All extraction, processing and transportation equipment operating within these Phases shall comply with the restrictions identified in Note L 'Noise'.
- 2. Rehabilitation will be progressive and proceed as limits of extraction (area and depth) are reached. Any deviations from the operations sequence shown (extraction, stripping and rehabilitation areas) will require the approval of MNR.
- 3. See Phase Notes on page 2 of 5 for details.

H. Extraction Details

- 1. The maximum depth of extraction is as shown as spot elevations and extraction will occur in up to 4 lifts through the three (3) Extraction Areas as shown on the Sequence of Operations Diagram on page 2 of 5 and in accordance with the Ministry of Labour requirements. The maximum lift height shall be 20m, with a typical face height of 10m, but will not exceed Ministry of Labour guidelines. The proposed quarry floor will range in elevation from 120.0 to 127.0 masl in Extraction Area 1, from 120.0 to 133.0 masl in Extraction Area 2 and 125.0 masl in Extraction Area 3 (30 m to 47 m above the existing ground surface).
- 2. Aggregate stockpiles will be located on the active quarry floor and will move throughout the life of the operations of the quarry. Stockpiles will be a maximum of 20m high and will not be located within 30m of the Licensed boundary, except where adjacent to Licence #604041 and Additional Lands to be Owned by Applicant.
- 3. Internal haul road locations will vary as extraction progresses.
- 4. Blasting will take place up to 5 times per week (No blasting shall occur on a holiday, or between 6 pm and 8 am).

I. Equipment and Processing

- 1. The equipment used on site for extraction and aggregate processing may include: Rock Drill, Portable Crushing and Screening Plant, Wash Plant, Loaders, Rock Trucks, Highway Trucks and portable equipment used for site preparation and rehabilitation including hydraulic shovels, dozers and scrapers.
- 2. The portable processing and screening plant and wash plant shall be located a minimum 10m below grade, one or more lifts down from existing ground elevation, except for processing area during initial extraction phase in each Extraction Area (see Note L1 'Noise').
- 3. Processing equipment shall remain a minimum of 30 metres from the licence boundary except where adjacent to Licence #604041 and Additional Lands to be Owned by Applicant (see Section M 'Variations from Control and Operation Standards').
- 4. All processing equipment is subject to applicable permitting under MECP Environmental Compliance Approvals.
- 5. Aggregate may be imported to the site and shall be used solely for the purpose of blending with onsite material.

J. Fuel Storage

- 1. There will be no fuel storage within the licence boundary. Fuel or associated products may be stored, as shown, near the entrance off Highway #41 (see 'Entrance/Haul Road Schematic' on page 2 of 5). The licensee or permittee shall ensure that fuel storage tanks are installed and maintained in accordance with the Technical Standards and Safety Act - 2009 (O.Reg 244/97 Section 0-12 (3) (4)). Refuelling of on-site equipment will be carried out by mobile trucks.

K. Scrap and Recycling

- 1. Temporary scrap storage will be located within the extraction area. Scrap will only include materials derived from the operation of the quarry such as scrap metal or lumber, discarded machinery and equipment. Scrap will not be located within 30m of any body of water or within 30m of the boundary of the site. All scrap will be removed on an ongoing basis. The property will be kept in an orderly condition.

2. Recycling activities:

- recycling of asphalt and concrete will occur may occur on site and will be in close proximity to the processing plant
- removal of recycled aggregate is to be ongoing
- recyclable asphalt shall not be stored within 30 metres of a body of water or within 2 metres of the groundwater table
- recycling activities shall remain accessory to the quarry operation and once extraction ceases, recycling activities will be no longer permitted
- shall not interfere with the operational phases of the site or rehabilitation of the site

L. Report Recommendations

1. Noise: "Acoustic Assessment for the Proposed Pembroke Quarry" November 20, 2024 (Source: Freefield Ltd.)

A. Noise Barriers and Berms

- i. Noise barriers and berms are to be provided as per Table 7 and Figure 15, 16, 17, 18 and 19.
- ii. Noise barriers and berms are to be solid, have no gaps, and are to have a surface density of no less than 20 kg/m2. Examples of suitable barriers or berms are as follows:
 - Lift face or existing terrain;
 - Earth, gravel or aggregate berms or stockpiles;
 - Concrete or brick walls;
 - Commercial noise barriers;
 - Shipping containers or buildings;
 - A portable barrier such as a truck trailer equipped with movable flaps to block the space between the ground and the bottom of the trailer and increase height if required.
- iii. Noise barriers shielding portable equipment may be progressively established to provide shielding from location of operation to the identified noise sensitive point of reception (POR).
- iv. Noise barriers shielding receptors representing vacant lots zoned for potential noise sensitive use (i.e. potential future residences) are only required following development of a noise sensitive use.

B. Rock Drill

- i. The operation of a standard hydraulic rock drill may take place only during the daytime period (07:00-19:00) and shall comply with the following:
 - When operating on the original surface (above grade) portable barriers are to be provided as per Table 7 and Figure 16.
 - When operating below grade, one or more lifts down, no local shielding is required.
- ii. The operation of a low noise rock drill, such as the Atlas Copco SmartRig ROC D9C or similar, may take place only during the daytime period (07:00 - 19:00), anywhere in the extraction area, above or below grade. No local shielding is required.

C. Wash Plant

- The operation of the wash plant may take place on a 24-hour basis and shall comply with the following:
 - i. The wash plant is to be located on the quarry floor at a maximum elevation of 155 mASL in Extraction Area 1 or Extraction Area 2 in locations shown in Figure 3, 5, 7, 9, 11 and 13.
 - ii. The generator used to provide power to the wash plant is to be fitted with an exhaust silencer that meets the minimum insertion loss requirements listed in Table 8.
 - iii. In addition, the generator trailers rear opening and side vents are to be fitted with acoustic louvers that meet the minimum insertion loss requirements listed in Table 8. The louvers shall be constructed of weather resistant material and fully seal all openings in the generator trailer.
 - iv. Items in the second bullet point (above) and third bullet point (below in Mobile Crushing Plant section) do not apply if Hydro or an alternative generator with a maximum outdoor sound power of 103.2 dBA, is used to provide power to the wash plant.

D. Mobile Crushing Plant

- The operation of the mobile crushing plant (crusher) may take place only during the daytime period (07:00 to 19:00) and shall comply with the following:
 - i. Except as noted below (note D.vi), the crusher is to be located on the quarry floor, minimum 10 m below grade, one or more lifts down.
 - ii. Noise barriers are to be provided as per Table 7 and Figure 17.
 - iii. The generator used to provide power to the crusher is to be fitted with an exhaust silencer that meets the minimum insertion loss requirements listed in Table 8.
 - iv. In addition, the generator trailers rear opening and side vents are to be fitted with acoustic louvers that meet the minimum insertion loss requirements listed in Table 8. The louvers shall be constructed of weather resistant material and fully seal all openings in the generator trailer.
 - v. Items in bullet points two and four above, do not apply if Hydro or an alternative generator with a maximum outdoor sound power of 103.2 dBA, is used to provide power to the crusher.
 - vi. During the Initial Extraction Phase in Area 1, Area 2 and Area 3, the crusher may operate on the original surface and shall comply with the following additional measures:
 - The crusher is to be located on the original surface in each extraction area in the processing areas shown.
 - A maximum of one loader may be in operation concurrently carrying out extraction, stockpiling and loading operations.
 - the crusher is not to operate concurrently with the rock drill, wash plant or quarry trucks during the initial extraction phase in each extraction area.

E. Loaders and Excavators

- The operation of loaders and excavators may take place on a 24-hour basis and shall comply with the following:
 - i. During the daytime period (07:00 to 19:00): A maximum of four loaders or excavators shall be in operation carrying out extraction, stockpiling and loading operations.
 - ii. During the evening (19:00 to 23:00) and nighttime (23:00 to 07:00) periods: A maximum of three loaders or excavators shall be in operation feeding material from stockpiles into the wash plant for further processing and carrying out loading operations for shipping. Extraction operations shall not occur during the evening (19:00 to 23:00) and nighttime (23:00 to 07:00) periods.

F. Highway Trucks

- The loading and shipping of product using highway trucks can take place on a 24-hour basis under the following conditions:
 - i. When operating on-site, highway trucks shall not exceed 30 km/h and shall not use compression braking (Jake Brakes)
- G. Quarry Trucks (Rock Trucks)**
 - The delivery of aggregate fines from the crushing and screening plant area to the wash plant using quarry trucks shall take place only during the daytime period (07:00 to 19:00) and shall comply with the following:
 - i. When operating on-site, quarry trucks shall not exceed 30 km/h and shall not use compression braking (Jake Brakes).

H. Portable Construction Equipment

- Portable construction equipment used for site preparation (e.g. land clearing and construction of berms) and rehabilitation shall comply with MECP Publication NPC-115, Construction Equipment, August 1978. (This publication gives noise standards to be met by construction equipment in Ontario.). Site preparation and rehabilitation activities shall take place only during daytime hours (07:00 - 19:00).

I. New Process

- If a new process is introduced to the site, then this new or modified process shall be assessed by a qualified acoustical consultant prior to commissioning. Noise mitigation measures shall be reviewed, and altered, if necessary, to ensure that MECP sound level limits are met at all points of reception. Consultation with MNR will be required to determine if a new or modified process requires an amendment to the site plan.

Table 7: Recommended Noise Barriers

Barrier	Minimum Height (m mASL)	Minimum Length* (m)	Maximum Distance from Source (m)	Required to shield Line of Sight from Identified Source	Required to shield Line of Sight to Identified Receptors	Description
Barrier_1	7 m	Up to 170 m	-	Mobile crushing and screening plant and Standard Hydraulic Rock Drill when operating in Extraction Area 3 east of Line AA (CP_Crusher) (RD_Rock_Drill)	POR_3_POR_4_POR_5_POR_6_POR_7	New barrier (lift berm). Required when operating in Extraction Area 3 east of Line AA
Barrier_2	6 m	Up to 120 m	-	Mobile crushing and screening plant and Standard Hydraulic Rock Drill when operating in Extraction Area 3 east of Line AA (CP_Crusher) (RD_Rock_Drill)	POR_3_POR_4_POR_5_POR_6_POR_7	New barrier (lift berm). Required when operating in Extraction Area 3 east of Line AA
Barrier_RD1 (Portable Barrier / Berm)	4 m	8 m	5 m	Standard Hydraulic Rock Drill when operating in Extraction Area 3 east of Line AA (RD_Rock_Drill)	POR_17*	New barrier (portable barrier / berm). -Required to shield noise impacts when operating in Extraction Area 3 as follows: a. When operating concurrently with the crusher, or b. When operating the drill on the surface within 450 m of POR 17
Barrier_CP1	10 m	20 m	40 m	Mobile crushing and screening plant when operating in Extraction Area 1	POR_4	New barrier (lift face or Stockpile) -Required to shield noise impacts when operating in Extraction Area 1 -not required during initial extraction phase in Area 1
Barrier_CP1_Extended	10 m	75 m	40 m	Mobile crushing and screening plant when operating in Extraction Areas 2 and 3	POR_3_POR_4_POR_5_POR_6_POR_7_POR_8_POR_9	New barrier (lift face or Stockpile) -Required when operating in Extraction Areas 2 and Extraction Area 3 -Only required to shield POR 7 following development of a noise sensitive development at this location -not required during initial extraction phase in Area 2 -not required to shield PORs 3, 4, 5, 6, 8, 9 and POR9 during initial extraction phase in Area 3 -Length of barrier may be reduced to shield Line of Sight to PORs and PORs as applicable during the initial extraction phase in Area 3.
Barrier_CP2	6 m	20 m	30 m	Mobile crushing and screening plant when operating in Extraction Area 2	POR_12	New barrier (lift face or Stockpile) -Required when operating in Extraction Area 2.
Barrier_CP3	10 m	20 m	40 m	Mobile crushing and screening plant when operating in Extraction Area 3	POR_17**	New barrier (lift face or Stockpile) -Required when operating in Extraction Area 3 -Required to be located at maximum 30 m from plant when operating within 410 m of POR 17 -not required during initial extraction phase in Area 3.
Barrier_CP4	10 m	20 m	40 m	Mobile crushing and screening plant when operating in Extraction Area 3	POR_1	New barrier (lift face or Stockpile) -Required when operating in Extraction Area 3

*Shielding of receptors representing vacant lots only required following development of a new noise sensitive development.

L1. Noise (cont'd)

Table 8: Minimum Insertion Loss for Exhaust Silencers and Acoustic Louvers at Generator

Source ID	Octave Band Centre Frequency: Hz								Rw
	63	125	250	500	1000	2000	4000	8000	
Exhaust Silencer The generators used to provide power to the crusher and the wash plant are to be fitted with a silencer which meets this requirement. -Refer source: CP_Gen_Exhaust_WP_Gen_Exhaust (Insertion loss based on SMS Silencer Model SM2)	2	11	25	28	24	19	18	19	23
Acoustic Louvers The trailers containing the generators used to provide power to the crusher and the wash plant are to be fitted with acoustic louvers at the rear doors and side vents, which meets this requirement. -Refer source: CP_Gen_OpenEnd_CP_GenLeft Side Louvre_CP_GenRight Side Louvre_WP_GenLeft Side Louvre_WP_GenLeft_Vent_1_WP_GenLeft_Vent_2_WP_GenLeft_Vent_3_WP_GenLeft_Vent_4 (Insertion loss based on Viste Acoustic Louvre Model ALV-AV-12)	7	7	10	13	20	21	20	20	18

- Notes:
 - 1. Alternative louvers/silencers are permissible providing the overall insertion loss meet the overall insertion loss (Rw) as noted above and the resulting sound is not tonal in character.
 - 2. Refer manufacturers data Appendix 4.

2. Natural Environment: "Natural Environment Report and Environmental Impact Study, Proposed Pembroke Quarry" November 27, 2024 (Source: Cambium Inc.)

- a. Extraction setbacks as identified on the Operational Plan are to be clearly demarcated and respected. Existing natural vegetation communities will be retained within the setbacks, except where berms are proposed.
- b. Submit an Information Gathering Form for SAR bats to the MECP.
- c. No clearing of vegetation shall occur within the core breeding bird season (April 1 – August 31) unless a nesting survey has been completed by a qualified biologist within 24 hours of the clearing, and no active nests were observed. No clearing or grubbing of vegetation during the active period for breeding birds and bats in Ontario: March 15 - November 30.
- d. To mitigate any potential impacts from blasting, blasting shall be completed in accordance with DFO standards as outlined in Explotech (Explotech Engineering Ltd., 2024).
- e. To mitigate impacts to water quality in the small wetland, and soil quality in adjacent areas, sand rather than salt shall be used on the access road from Stafford Third Line to address ice in winter.
- f. Implement a SAR Training Program and Encounter Protocol. The SAR Training Program is to be provided for all new on-Site staff as part of orientation training. The Training Program will include:
 - i. Information / training on identifying SAR
 - ii. What to do if a SAR is observed (Encounter Protocol)
 - iii. How to protect a turtle or bird nest
 - iv. Information on how to report a SAR sighting
- g. Standard best management practices shall be implemented to reduce dust and noise mitigation at the quarry, and shall be continued during operation of the project.
- h. Undertake rehabilitation as outlined in the rehabilitation plan.

3. Archaeology: "Stage 1 Archaeological Assessment Proposed Pembroke Quarry" July 30, 2024 and "Stage 2 Archaeological Assessment Proposed Pembroke Quarry" October 1, 2024 (Source: Matrix Heritage Inc.) Letter from Ministry of Cultural Heritage and Sport (MCHSP) dated December 23, 2024: Review and Entry into the Ontario Public Register of Archaeological Reports: Archaeological Assessment Report Entitled, "Stage 2 Archaeological Assessment: Proposed Pembroke Quarry Part Lots 12 and 13, Concession 3, Geographic Township of Stafford, Township of Laurentian Valley County of Renfrew, Ontario", Dated Oct 1, 2024, Filed with MCM on Oct 6, 2024, MCM Project Information Form Number P378-0077-2024, MCM File Number 0020623. Based on the results of this investigation it is recommended that:

- a. No further archaeological study is required for the subject property as delineated in Map 1 of the report (Stage 2 assessment):
 - Algonquins of Ontario
31 Riverside Drive, Suite 101, Pembroke, ON K8A 8R6 Tel #905-466-0452
Email: mknight@tanakwin.com; kforward@tanakwin.com
 - Algonquins of Pikwakanagan First Nation
1657A Mishomis Inamo, Pikwakanagan, ON, Canada K0J 1X0 Tel #613-625-1551
Email: guardians.clerk@pikwakanagan.ca; consultation@pikwakanagan.ca; communications.consultation@pikwakanagan.ca; katy.dimmer@thefirstlightgroup.com

4. Hydrogeology: "Level 1 and Level 2 Water Report" November 27, 2024 (Source: WSP Canada Inc.) Maximum Predicted Water Table Report: "Maximum Predicted Water Table Report" November 27, 2024 (Source: WSP Canada Inc.)

- a. During the operational life of the quarry the groundwater and/or surface water monitoring programs required by the Permit to Take Water (PTTW) under Section 34 of the Ontario Water Resource Act (OWRA) and the Environmental Compliance Approval (ECA) under Section 53 of the OWRA shall be implemented. Annual monitoring reports shall be provided to MNR and the Township of Laurentian Valley.
- b. In the event of a well interference complaint, the licensee shall implement the Complaints Response Program (January 15, 2026 Response to MECP Groundwater Comments). When a complaint is received by Cavanagh, a representative of Cavanagh or their agent will visit the site to make an initial assessment within three days of receiving the complaint. The information obtained by the contractor from the well/well system inspection and the review of the available groundwater level data will be used by the professional hydrogeologist/engineer to prepare an opinion on the likelihood that the well interference complaint is attributable to quarry dewatering.
 - If it is concluded that the well interference complaint is most likely attributable to quarry dewatering activities at the site and the water supply is at risk, then a temporary supply will immediately be arranged, and a water supply restoration program will be implemented which could consist of the following measures: well system rehabilitation, well replacement or additional wells(s), communal water supplies, and/or water treatment considerations. Any water supply restoration activities undertaken to address an adverse effect would be done so in consultation with the affected property owner in order to ensure a mutually agreeable solution is implemented.

5. Blasting: "Blast Impact Analysis - Cavanagh Quarry" October 30, 2024 (Source: Explotech Engineering Ltd.)

- a. An attenuation study shall be undertaken by an independent blasting consultant during the first 12 months of operation in order to obtain sufficient quarry data for the development of site-specific attenuation relations. This study will be used to confirm the applicability of the initial guideline parameters and assist in developing future blast designs.
- b. Blasts shall be designed and loaded adhering to Table 2: Maximum Explosive Load at Set Offset Distances - 12.5 m/sec until the attenuation study is completed. Upon completion of the attenuation study, a site specific attenuation relation will be developed and will be utilized to develop a new load chart to be utilized going forward.
- c. 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) digital seismographs – one installed in front of the blast and one installed behind the blast. Monitoring shall be performed by an independent third party engineering firm with specialization in blasting and monitoring.
- d. Blasts shall be designed to maintain vibrations below 13mm/s at the location of the closest identified spawning bed as per DFO guidelines during identified spawning windows. When blasting during active spawning season, a minimum of one supplemental vibration monitor shall be installed on the shoreline closest to the spawning bed to confirm vibration levels.
- e. The guideline limits for vibration and water overpressure shall adhere to standards as outlined in the Guidelines For the Use of Explosives In or Near Canadian Fisheries Waters (1998) or any such document, regulation or guideline which supersedes this standard.
- f. All blasts shall be monitored for ground vibration at the adjacent TransCanada Pipelines Limited High Pressure Natural Gas Pipeline when blasting within 100m of the pipeline or when calculations suggest vibrations in excess of 35mm/s.
- g. Blasts shall be designed to maintain vibrations at the transmission towers in the Hydro One Corridor below 50 mm/s or any such document, regulation or corporate policy in effect at the time. When vibration calculations suggest vibrations at the towers may exceed 35 mm/s, the towers shall be monitored for ground vibration.
- h. The guideline limits for vibration and overpressure shall adhere to standards as outlined in the 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 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 and will be designed and maintained so that the direction of the overpressure propagation and flyrock from the face 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 applicable guidelines and regulations. Decking, reduced hole diameters and sequential blasting techniques will be used to ensure minimal explosives per delay period initiated.
- 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.
 - Detailed blast records shall be maintained in accordance with current industry best practices.

L5. Blasting (cont'd)

Table 1:

Sensitive Receptor	Point of Reception	Straight Line Distance from proposed Pembroke Quarry Extension Extraction Boundary to Receptor (m)	Extraction Area Closest to Sensitive Receptor
2686 Stafford Third Line		319	3
2682 Stafford Third Line	POR 4	304	3
2683 Stafford Third Line	POR 3	222	3
2409 Stafford Third Line	POR 2	661	2
2453 Stafford Third Line		660	2
Trailer (Refer to Appendix A)	---	856	2
2442 Stafford Third Line		771	2
2401 Stafford Third Line	POR 10	801	2
2359 Stafford Third Line		890	2
2383 Stafford Third Line		817	2
2301 Stafford Third Line	POR 11	665	2
222 Dicks Road	POR 13	372	1
229 Dicks Road	POR 14	235	1
206 Dicks Road	POR 12	475	1
1736 Stafford Second Line	POR 5	502	3
S1 (no address available)		493	3
1719 Stafford Second Line	POR 6	610	3

M. Variations from Control and Operation Standards

No.	O.Reg 244/97 Section 0.13	Variation	Rationale
1	(1)1	No gate at entrance/exit to Licence Boundary and Additional Lands Owned by Applicant (see page 2 of 5).	Adjacent property to the northwest is owned by Cavanagh
2	(1)0.i	On excavation setback along a portion of the common boundary with Additional Lands to be Owned by Applicant and French Hill Quarry.	Adjacent property to the northwest is to be owned by Cavanagh and adjacent property to northeast is the French Hill Quarry.
3	(1)1.i	Overburden materials may be stored and stockpiling of aggregate, topsoil, and operation of portable plant may occur within 30m of licence boundary, next to adjacent Licence #604041 and Additional Lands to be Owned by Applicant.	Adjacent property to the northwest is to be owned by Cavanagh and an adjacent property is a licensed quarry.
4	(3)(a)	Berms may be located within 3m of the licence boundary adjacent to hydro easement. Fencing is not required along the portions of the boundary that traverse the TransCanada Pipelines Limited easement. Fencing along the common boundary with adjacent to Licence #604041 is not required.	Adjacent lands are owned by Cavanagh. These boundaries will be demarcated by 1.2m high marker posts that are visible from one to the other. Adjacent property in this location is a licensed quarry. If conditions in or around the licensed quarry change or if licence is surrendered, a 1.2m high fence will be installed.

Site Plan Amendments

No.	Date	Description	By

MNR Approval Stamp and Seal: Stamp with signature and 'REAL DRAFTY' text.

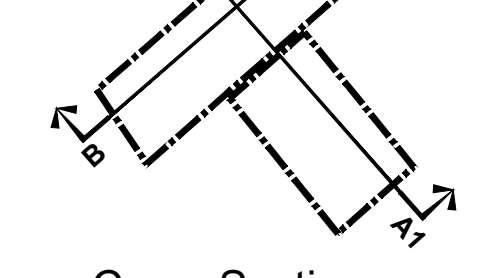
THOMAS CAVANAGH CONSTRUCTION LIMITED logo and contact information: 9094 Cavanagh Road, Ashton Ontario, K0A 1B0 Tel: (613) 227-1448

Project: Pembroke Quarry. Applicant's Signature: Phil White, Quality Control Manager, Aggregates & Asphalt. Plan Scale: NTS. Plot Scale: 1:4.0 [1mm = 4.0 units] Model. Drawn By: D.G.S., File No. 0851J. Checked By: N.D. File Name: OPERATIONAL NOTES PLAN. Drawing No.: 3 OF 5. K:\0851J-Thomas Cavanagh Construction-Pembroke\A\Cavanagh Pembroke Quarry Notes\plan3of5 February2026.dwg

Legal Description
 PART LOTS 12 & 13
 CONCESSION 3
 (former Geographic Township of Stafford)
 TOWNSHIP OF LAURENTIAN VALLEY
 RENFREW COUNTY

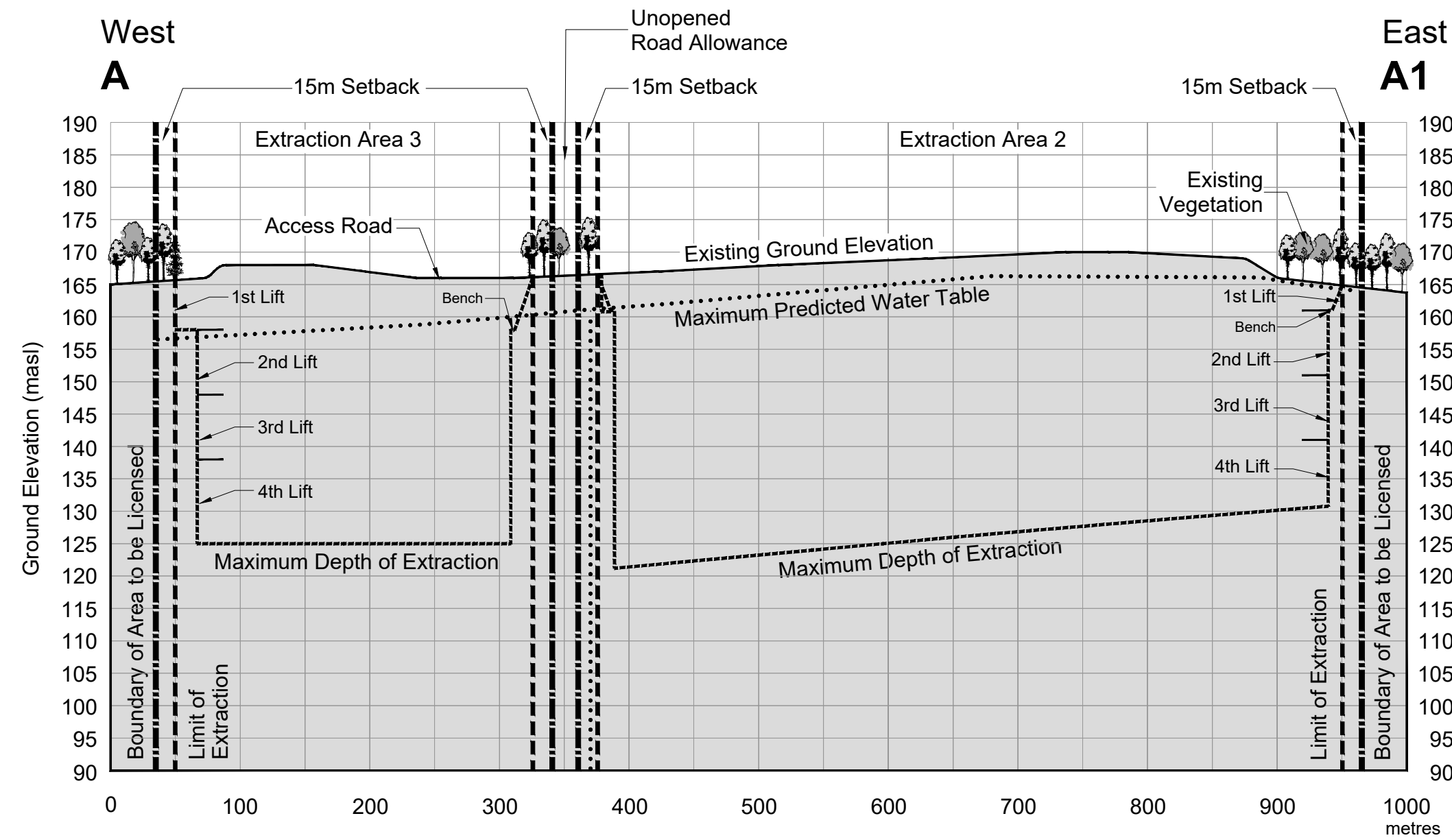
Legend

- Boundary of Area to be Licensed
- Limit of Extraction
- Maximum Depth of Extraction
- Vegetation/Trees
EXISTING AND/OR PROPOSED AS INDICATED ON CROSS SECTIONS
- Maximum Predicted Water Table
(SEE NOTE D1 ON PAGE 1 OF 5 AND NOTE E ON PAGE 3 OF 5)

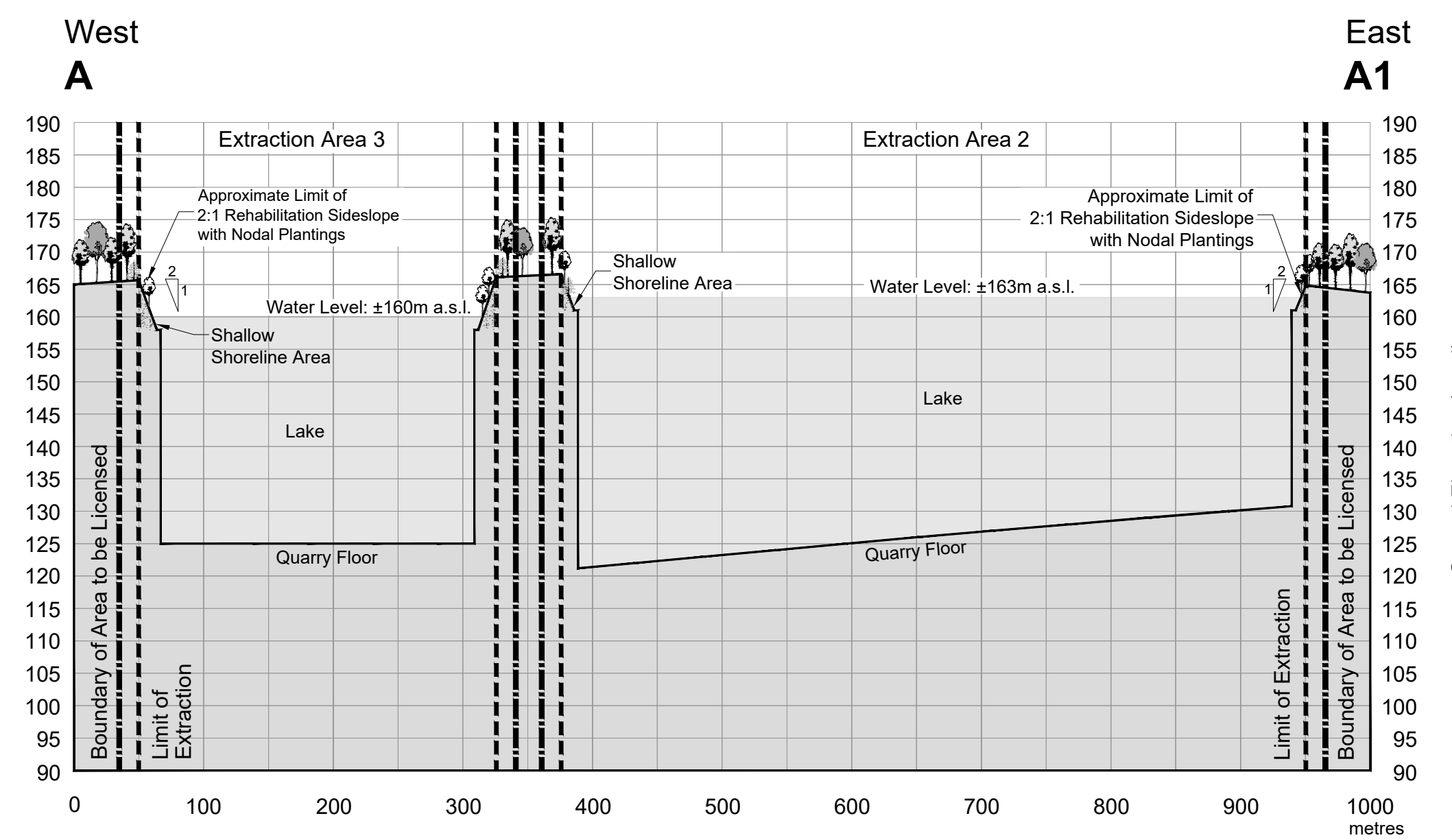


Cross Sections
 SEE PAGES 1, 2 & 4 OF 5 FOR PLAN VIEW LOCATION OF CROSS SECTIONS

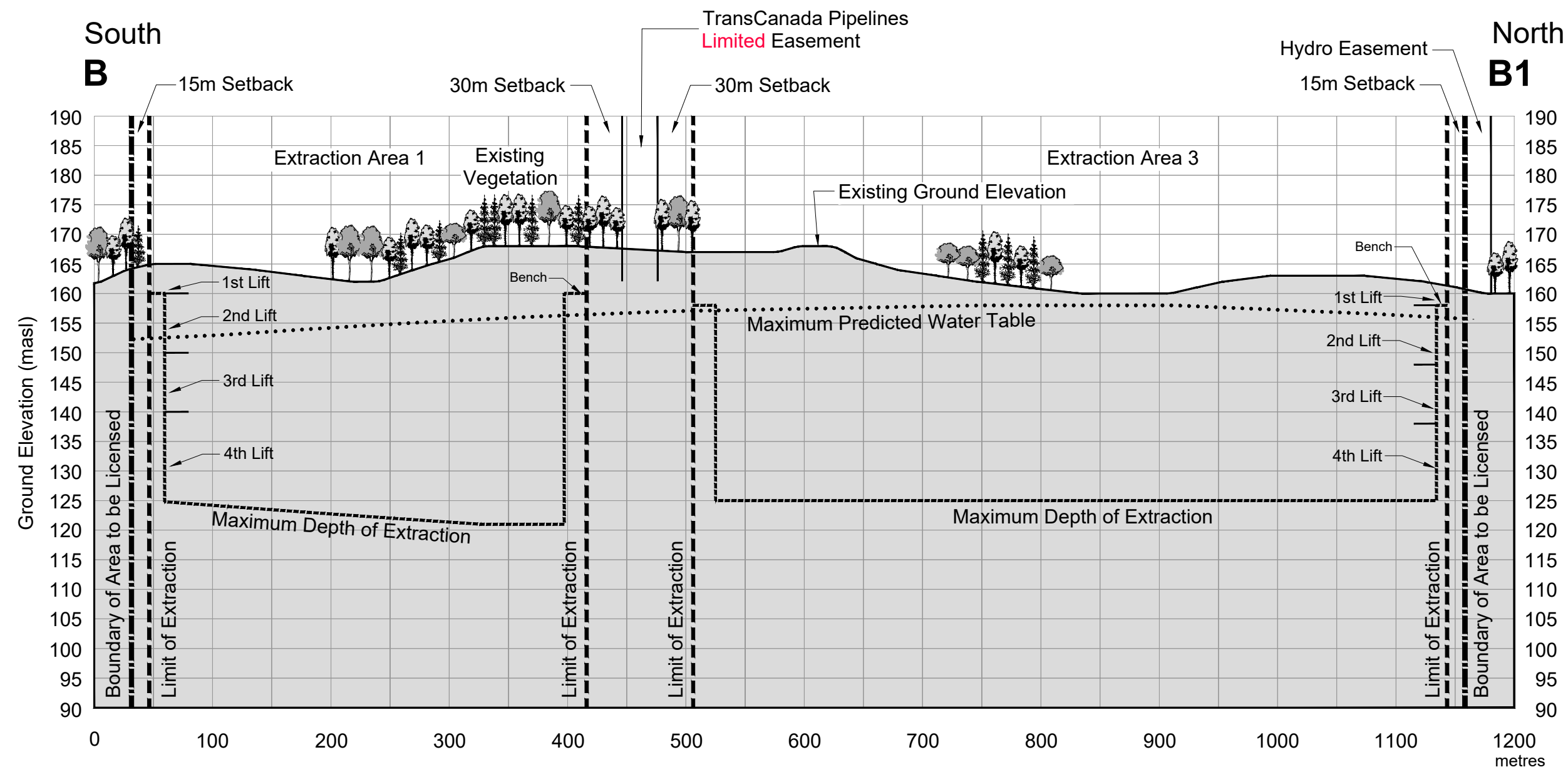
Section A-A1 Existing Conditions



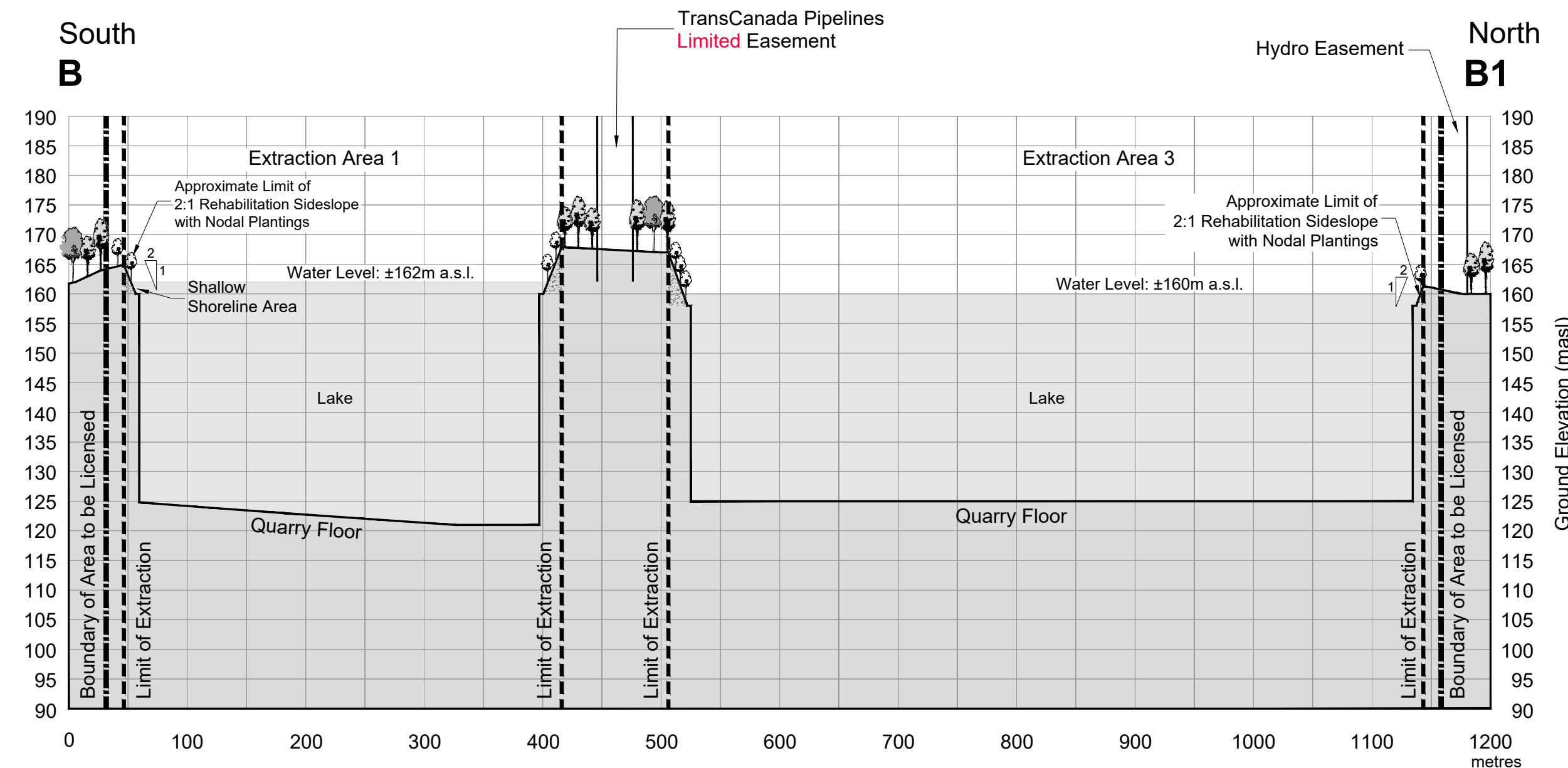
Section A-A1 Rehabilitated Conditions



Section B-B1 Existing Conditions



Section B-B1 Rehabilitated Conditions



For all Cross Sections
 Horizontal Scale - 1:4,000
 Vertical Scale - 5x Exaggeration

Site Plan Amendments

No.	Date	Description	By

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
 200-540 BINGEMANS CENTRE DR. KITCHENER, ON, N2B 3X9 | P: 519.576.3650 | WWW.MHBCPLAN.COM

MNR Approval Stamp

Stamp

Applicant's Signature

THOMAS CAVANAGH CONSTRUCTION LIMITED
 9094 Cavanagh Road, Ashton Ontario, K0A 1B0
 Tel: (613) 227-1448

Phil White
 Quality Control Manager
 Aggregates & Asphalt

Project **Pembroke Quarry**

ARA Licence Reference No. _____ Pre-approval review: _____

Revs as per comments from Agencies - Feb. 2026
 For Submission to MNR - November 2024

Plan Scale: 1:4,000 (Horizontal) / 5x Exaggeration (Vertical) Plot Scale: 1:4.0 [1mm = 4.0 units] Model

HORIZONTAL SCALE
 0 25 50 100 200 METRES

Drawn By: D.G.S. File No. **0851J**
 Checked By: N.D.

File Name: **CROSS SECTION PLAN**

Drawing No. **5 OF 5**

K:\0851J\Thomas Cavanagh Construction-Pembroke\A\Cavanagh Pembroke Quarry Xsecplan5of5 February2026.dwg