

**NOTES:**

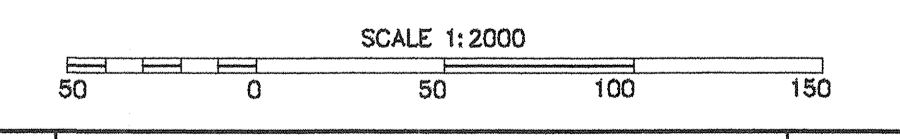
1. THIS SITE PLAN IS PREPARED UNDER THE AGGREGATE RESOURCES ACT FOR A CLASS A LICENCE, CATEGORY 1.
2. ALL DIMENSIONS ARE IN METRIC UNITS. ELEVATIONS ARE GEODETIC, ASL.
3. TOPOGRAPHIC FEATURES & PARCEL INFORMATION FROM PHOTOGRAMMETRIC MAPPING BY FIRST BASE SOLUTIONS (JD BARNES), BRAMPTON, ONTARIO, UTILIZING 2015 AIR PHOTOGRAPHY.
4. THE PROPOSED LICENSED AREA IS 24.7 HECTARES AND IS ZONED A1, GENERAL AGRICULTURAL. SURROUNDING ZONING DESIGNATIONS ARE SHOWN ON THE PLAN.
5. THE ELEVATION OF THE WATER TABLE VARIES FROM 234.90m AMSL TO 235.92m AMSL. THE ELEVATION OF THE WATER TABLE WAS TAKEN FROM FIGURE 10 - "INFERRED HIGH GROUNDWATER TABLE CONFIGURATION (MARCH 2017)", IN THE REPORT BY NOVATERRA ENVIRONMENTAL LTD. (MAY 24, 2017) TITLED: "HYDROGEOLOGICAL LEVEL 1 AND LEVEL 2 ASSESSMENTS, PROPOSED MAES PIT".
6. REFERENCE WAS ALSO MADE TO MAPPING FROM THE COUNTY OF MIDDLESEX WEBSITE. ZONING INFORMATION WAS OBTAINED FROM THE WEBSITES OF THE MUNICIPALITY OF MIDDLESEX CENTRE AND THE MUNICIPALITY OF STRATHROY-CARADOC.
7. SEE DRAWING 4 OF 4, PROGRESSIVE REHABILITATION & FINAL REHABILITATION PLAN FOR CROSS-SECTION A-A'.

**LEGEND:**

- BUILDING
- DRAINAGE DIRECTION
- LICENCE BOUNDARY
- 120m OFFSET LINE
- LOT LINE
- EXISTING 1.2m HIGH FENCE
- SPOT ELEVATION
- 1m CONTOUR
- DECIDUOUS TREE
- CONIFEROUS TREE
- MONITORING WELL(MW) OR STAFF GAUGE(SG)
- STOCKPILES
- WATER FEATURE
- WOODED AREA
- CONIFEROUS PLANTATION
- FARM ENTRANCE

**JOHNSTON BROS.(BOTHWELL) LIMITED**  
 21220 JOHNSTON LINE, RR1, WARDSVILLE, ONTARIO, N0L 2N0  
**MAES PIT**  
 PART LOTS 1 & 2, CONCESSION 2  
 MUNICIPALITY OF MIDDLESEX CENTRE  
 (FORMERLY THE TOWNSHIP OF LOBO)  
 COUNTY OF MIDDLESEX

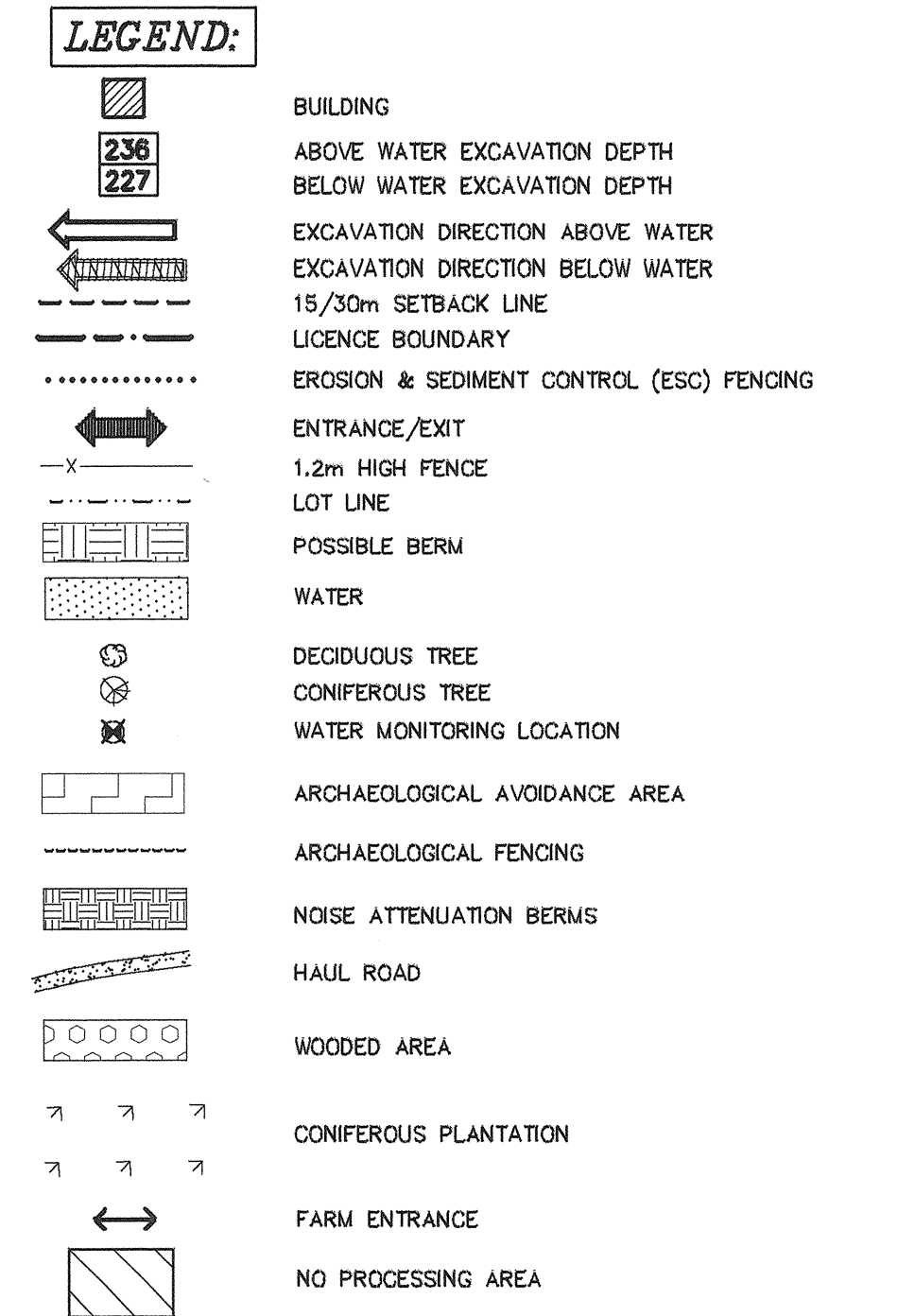
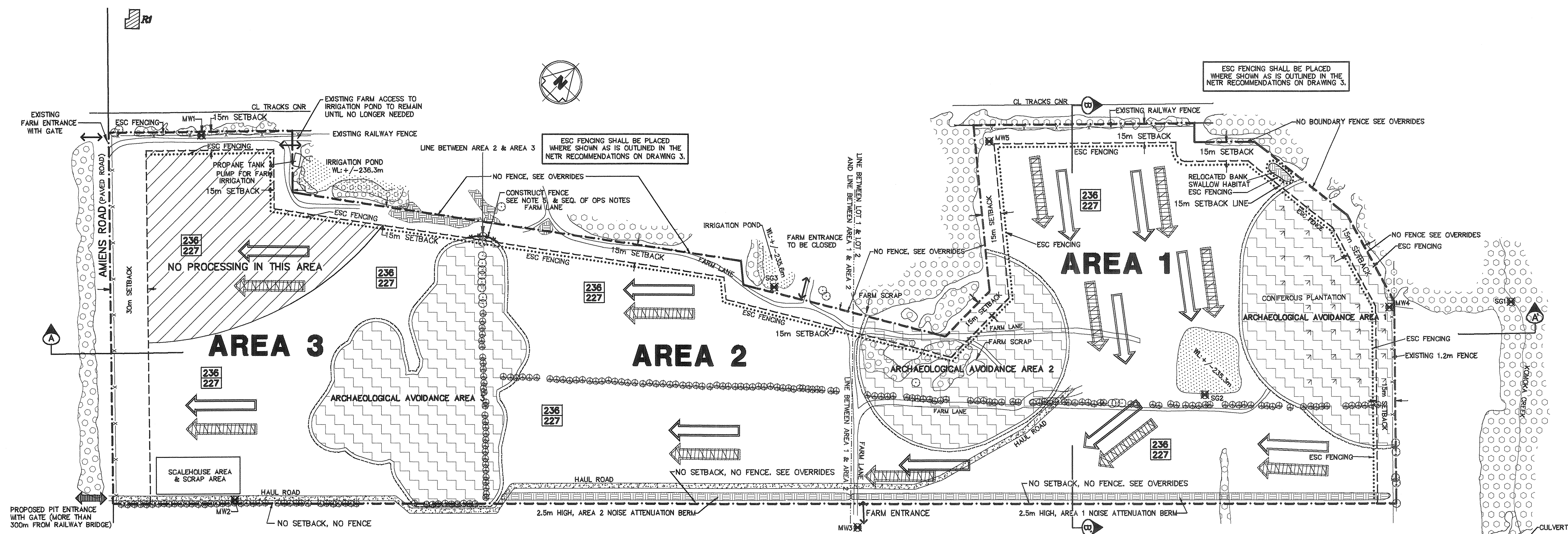
**EXISTING FEATURES**  
 DRAWING 1 of 4



*W.L. Bradshaw*

No.	AMENDMENT	DATE



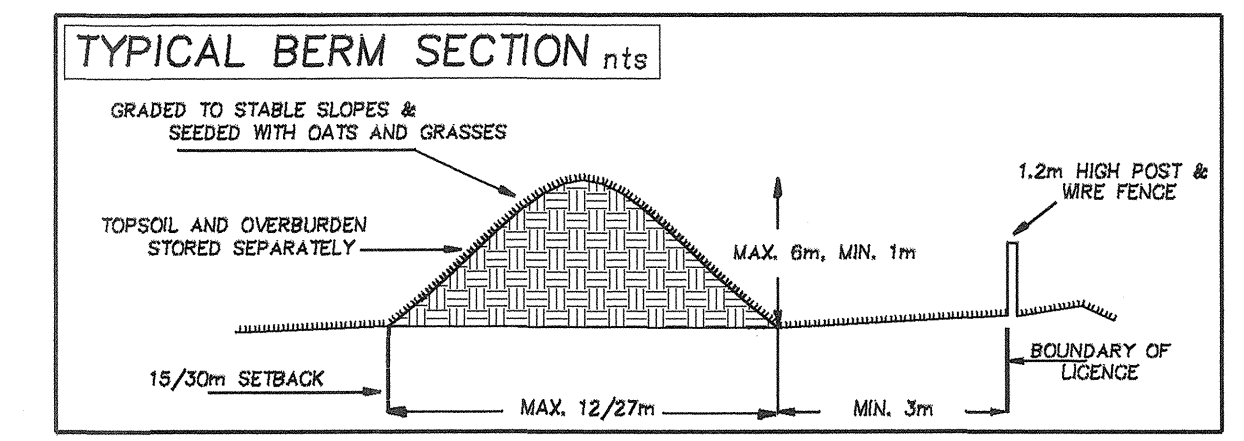


**SEQUENCE OF OPERATIONS & PROGRESSIVE REHABILITATION**

- In General:**
- Phases do not represent any specific or equal time period.
  - Prior to stripping in any area, archaeological avoidance areas shall be fenced as indicated in the "Archaeological Recommendations" on drawing 3 of 4.
  - The setbacks in any current working Area shall be marked with posts every +/-60m.
  - Rehabilitation will be progressive and proceed as outlined below. The current agricultural uses shall continue on this site as long as possible during pit operations.
  - This pit shall be operated in three areas with one bench above water varying across the site from approximately 1 to 4 metres and one bench below water of approximately 9 metres.
  - Operations shall proceed in the directions of the arrows shown.
  - As the limit of extraction is reached the perimeter areas shall be rehabilitated as outlined on the Progressive Rehabilitation and Final Rehabilitation Plan.
  - Notwithstanding the operational and rehabilitation notes, demand for certain products or blending of materials may require minor deviations in the extraction and rehabilitation sequence. Any other major deviations shall require written MNR approval.
- Phase 1 (Start up):**
- The entrance shall be constructed where shown and fencing shall be erected where required.
  - Archaeological avoidance areas within Area 1 shall be fenced. The north part of the archaeological avoidance area that straddles Area 2 and Area 3 shall be fenced adjacent to the haul road where shown.
  - Area 1 setbacks shall be marked as noted in the General notes above. Archaeological avoidance areas shall be excluded from setback marking until archaeological concerns are addressed in any area and a signoff letter is received for that area from MTCS.
  - Silt fencing shall be installed and maintained adjacent to any disturbed operational areas where required. See the Natural Environment Recommendations on Drawing 3 of 4, Consultant Recommendations.
  - Prior to the commencement of stripping operations the bank swallow habitat shall be relocated within the set out date restrictions to the location shown and constructed and maintained as outlined in Natural Environment Recommendations as shown on Drawing 3 of 4, Consultant Recommendations. The relocated habitat shall be inspected and approved by MNR staff.
  - Area 1 shall be stripped and the material shall be used to construct the Area 1, 2.5m noise attenuation berm. If there are insufficient materials in Area 1 stripings to construct berms, then the east side of the Area 2 archaeological avoidance area shall be fenced and stripped material from Area 2 shall also be used to construct Area 1 noise attenuation berms.
  - If required the scale and scale house area shall be prepared in the north part of Area 3 approximately where shown.
- Phase 2:**
- Above water extraction shall commence on the northwesterly side of Area 1 and shall proceed in the directions of the arrows.
  - Below water extraction shall follow above water extraction.
  - If any archaeological avoidance areas in Area 1 are cleared in writing by the Ministry of Tourism, Culture and Sports (MTCS). The fencing around the cleared area may be removed and the area may be stripped and extracted. Stripped materials from these areas shall be used immediately for progressive rehabilitation if practical or stored in berms and stockpiles.
  - Progressive and final rehabilitation of the pond edges shall take place where possible as extraction moves westerly.
- Phase 3:**
- Archaeological avoidance areas shall be fenced on the Area 2 sides as required.
  - Area 2 shall be progressively stripped starting on the easterly side and the material shall be used to construct the Area 2 noise attenuation berm. When no longer required for noise attenuation, the Area 1 berm shall be used for progressive rehabilitation and/or construction of the noise attenuation berm in Area 2.
  - Above and below water extraction shall transition from Area 1 into the east side of Area 2 and shall continue westerly.
  - If any archaeological avoidance areas in Area 2 and/or Area 1 are cleared in writing by MTCS, the fencing around the cleared area may be removed and the area may be stripped and extracted. Stripped materials from these areas shall be used immediately for progressive rehabilitation if practical or stored in berms and stockpiles.
  - Progressive and final rehabilitation of Areas 1 & 2 shall continue as the limits of below water extraction are reached.
- Phase 4:**
- Archaeological avoidance areas shall be fenced on the Area 3 side as required.
  - Area 3 shall be progressively stripped starting on the easterly side and the material shall be used for rehabilitation in other areas or stored in berms and stockpiles. When no longer required for noise attenuation, the Area 2 berm shall be used for progressive rehabilitation or stored in stockpiles and /or berms.
  - Above and below water extraction shall transition from Area 2 into the east side of Area 3 and shall continue westerly.
  - If any archaeological avoidance areas in Area 3, Area 2 or Area 1 are cleared in writing by MTCS, the fencing around the cleared area may be removed and the area may be stripped and extracted. Stripped materials from these areas shall be used immediately for progressive rehabilitation if practical or stored in berms and stockpiles.
  - Progressive and final rehabilitation of Areas 1, 2 & 3 shall continue as the limits of below water extraction are reached.
- Phase 5:**
- At this point in the operations, any archaeological areas that have been cleared, have been extracted. Any remaining archaeological areas that have not been cleared will have been protected with no further extraction plans.
- Any remaining product stockpiles shall be removed. Any remaining parts of the haul road or the scale house area shall be extracted where allowable and hauled off site. The areas within the setback that were used for the haul road or the scalehouse area shall be rehabilitated.
  - Berms shall be removed and used to enhance perimeter rehabilitation, to sculpt shorelines and to create islands and aquatic benches.
  - Final rehabilitation shall be completed on the entire site.

**OPERATIONAL NOTES**

- SETBACKS:** Extraction setbacks shall be 30m along the roadside boundary with Amlens Road, 15m along the north boundary where the boundary is adjacent to the railway and 15m along all other boundaries with the exception of the south boundary. The setback along the south boundary has been reduced to 0m by adjacent landowner agreement. See the Site Plan Overrides.
- MAXIMUM DEPTH OF EXTRACTION:** The maximum depth of extraction shall be approximately to the 236m elevation above water in one lift. The maximum depth of extraction below water shall be to the 227m level.
- SIDESLOPES:** Final perimeter slopes above water shall be constructed no steeper than 2(horizontal) to 1(vertical) and shall be created by backfilling with onsite materials. Final slopes shall be spread with a minimum of 0.15 metres of topsoil and shall be seeded and vegetated as outlined in the Natural Environment Recommendations. Below water slopes and shoreline zones (within 5m of the water line) shall vary from 1:1 to 10:1 to enhance shoreline diversity. See Site Plan Override.
- ENTRANCE/EXIT/GATE:** The entrance to Amlens Road shall be constructed where shown. An entrance permit shall be required from the Municipality. A 1.2m gate shall be installed at the entrance and shall be kept closed when the pit is not operating.
- FENCING:** Post & wire fencing (minimum height 1.2 metres) shall be maintained on the roadside boundary and on the easterly boundary. There shall be no fencing on the southerly boundary or on the northerly boundaries where shown by landowner agreement. See Site Plan Override 1. Unfenced boundaries shall be delineated with highly visible marker posts, minimum height 1.2m, at the corners and every +/- 60m.
- TOPSOIL/OVERBURDEN STORAGE:**
  - All topsoil and overburden shall be stripped and stored separately.
  - At the commencement of stripping, stripped topsoil and overburden shall be used to construct the noise attenuation berms as shown in the Noise Feasibility Study Recommendations on Drawing 3 of 4, "Consultant Recommendations". Also see the Sequence of Operations notes on this page.
  - As operations proceed, future topsoil and overburden shall be used to construct noise attenuation berms or stored on the pit floor in stockpiles or utilized for progressive rehabilitation.
  - Prior to operations proceeding in any Area, a noise attenuation berm shall be constructed in that Area as outlined in the Noise Feasibility Study Recommendations. Also see the Sequence of Operations notes on this page.
  - Stockpiles shall not be located within 30m of the roadside boundary except in the form of berms. Also see Site Plan Override 3.
  - All topsoil, subsoil and overburden stockpiles shall be a maximum of 6 metres in height, graded to stable slopes and seeded to prevent erosion.
  - Berms shall be constructed and maintained as shown in the Berm Detail.
  - All topsoil stripped in the operation of this site shall remain on site and shall be used for the rehabilitation of this site.
- EXCAVATION EQUIPMENT:** Equipment to be utilized on this site shall include scrapers, bulldozers, loaders, dump trucks, excavators and portable screening equipment. No equipment shall be parked, stored or installed within 30m of the roadside boundary. See overrides.
- AGGREGATE STOCKPILES:** Aggregate stockpiles shall follow the processing area and be a maximum of 15 metres in height.
- DUST CONTROL:** Dust control shall be maintained through the application of water. Dust shall be mitigated on site.
- NOISE, DUST OR GROUNDWATER INTERFERENCE PROBLEMS:** Should noise, dust or groundwater interference complaints be received, the licensee shall take appropriate measures as deemed necessary by the Ministry of Environment Conservation & Parks to rectify the problem(s).
- DEWATERING/WASHING:** No dewatering shall take place on this site. No washing of aggregate materials shall take place on this site.
- SCRAP STORAGE:** All scrap from pit operations shall be collected and stored in the scrap area near the scale house area. All scrap shall be removed from the site on an ongoing basis. Existing and future farm scrap shall be stored outside of the licensed area.
- PETROLEUM STORAGE:** Petroleum products may be stored in the scale house area on an Impervious pad and shall meet the requirements of the Technical Standards and Safety Act. Any spills shall be removed and disposed of at a facility approved by the Ministry of Environment Conservation & Parks. See the Spills Plan on this page. Mobile fuel tanks shall be the new generation engineered double-tanked variety with vacuum sealed valves.
- BUILDINGS:** A scale, scale house and an accessory building may be constructed within the scale house area shown. See the Site Plan Overrides.
- DRAINAGE:** Surface drainages initially shall be by percolation into the pit floor. As rehabilitation is completed the site shall be graded to drain towards the pond as shown on drawing 4 of 4, "Progressive Rehabilitation & Final Rehabilitation Plan". There will be no offsite drainages from operational areas.
- EXTRACTION AREA:** The extraction area is 21.6 hectares.
- TONNAGE CONDITION:** The maximum amount of aggregate that may be removed in any calendar year is 200,000 tonnes.
- WATER TABLE ELEVATION:** The elevation of the water table varies from 234.79m ASL to 235.92m ASL. The elevation of the water table was taken from Figure 10 in the report by Novatera Environmental Ltd. (May 24, 2017) titled: "Hydrogeological Level 1 and Level 2 Assessments - Proposed Maes Pit" prepared for this application.
- HOURS OF OPERATION:** The hours of operation shall be from 7a.m. to 6p.m. from Monday to Friday and from 8am to noon on Saturdays. There shall be no operations on Sundays or civic holidays.
- TREE REMOVAL:** Any trees removed as part of the operation of this site shall be utilized as firewood or shall be ground into mulch.
- SEDIMENTATION & EROSION CONTROL (SEC)** fencing shall be installed along the northerly & easterly 15m setback lines where shown & shall be inspected weekly.
- BANK SWALLOW HABITAT** shall be relocated to the northeasterly boundary where shown as outlined in the NETR recommendations.
- CONSULTANT RECOMMENDATIONS:** Consultant Recommendations for Noise, Natural Environment, Hydrogeology and Archaeology are shown on Drawing 3 of 4, "Consultant Recommendations" and have been implemented on this plan where applicable.
- ADDITIONAL WATER MONITORING INSTRUMENTATION:** Prior to the commencement of Operations in Area 1, pressure transducers shall be installed in monitoring wells MW4 and MW5.



**Site Plan Overrides of the Operational Standards**

- STANDARD 5.1** - Fencing is not required on boundaries where adjacent lands are also owned by the landowner with whom the licensee has an extraction agreement and a boundary agreement.
- STANDARD 5.2** - Farm gates located within or on the licence boundary shall not be required. These gates are in locations where there is no Public access and shall only be used for farming access. The proposed pit entrance in the westerly corner shall have a gate installed.
- STANDARD 5.10.1** - Excavation setbacks have been reduced to zero metres adjacent to the south boundary. These adjacent lands are owned by the landowner with whom the licensee has an extraction agreement and a boundary agreement.
- STANDARD 5.13.1** - Stockpiles and processing equipment may be located within 30m of the south boundary and northerly boundaries that are not adjacent to CN lands. These adjacent lands are owned by the landowner with whom the licensee has an extraction agreement and a boundary agreement.
- STANDARD 5.13.1** - The scale and scalehouse area may be located within 30m of the north licence boundary. These adjacent lands are owned by the landowner with whom the licensee has an extraction agreement and a boundary agreement.
- STANDARD 5.19.1** - Rehabilitated shoreline zones (within 5m of the edge of the water) and below water slopes may vary from 1:1 to 10:1 to enhance shoreline diversity.

**SPILLS PLAN**

In case of an accidental spill of petroleum products, the following contingency plan will be activated:

- The Ministry of Environment Conservation & Parks (See address & phone number below) and surrounding landowners will be notified.
- For a leakage or spill immediate action will be taken to stop it. At the same time measures will be taken to prevent spreading. These measures may include building or a berm or construction of a ditch, for instance.
- The pit operator shall commence recovery procedures by collecting the spilled substance into containers.
- The soil in the area affected by the spill or leak shall be removed and disposed of at a location prescribed by the Ministry of Environment Conservation & Parks.

Ministry of Environment Conservation & Parks, Southwest Regional Office  
733 Exeter Road, 2nd Floor  
London, Ontario, N6E 1L3  
Spills Action Centre: 1-800-268-6060

**JOHNSTON BROS. (BOTHWELL) LIMITED**  
21220 JOHNSTON LINE, RRT1, WARDSVILLE, ONTARIO, N0L 2N0  
**MAES PIT**  
PART LOTS 1 & 2, CONCESSION 2  
MUNICIPALITY OF MIDDLESEX CENTRE  
(FORMERLY THE TOWNSHIP OF LOBO)  
COUNTY OF MIDDLESEX

**OPERATIONAL PLAN**  
DRAWING 2 of 4

SCALE 1:2000

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No.	AMENDMENT	DATE



**Natural Environment Recommendations (by Biologic Incorporated)**

**1.Recommendation 1:** Prior to the commencement of operations, a Species at Risk (SAR) Mitigation and Monitoring Plan shall be developed and followed to ensure species at risk habitats within the licence boundary are protected and conditions of Subsection 23.14 under Ontario Regulation 242/08 are met to ensure extraction activities are not in contravention with the Endangered Species Act (2007).

**2. Recommendation 2:** Prior to extraction, rehabilitate the central irrigation pond and transfer amphibian species from the east pond to the central irrigation pond. Rehabilitation would include retrofitting the irrigation uses to create a permanent, reliable water feature. Enhancements shall include placement of woody debris along the banks to create structure for calling, foraging, escape and concealment from predators. Once the central irrigation pond has been re-habilitated, amphibians and/or egg masses inhabiting the east pond shall be transferred to the central pond by qualified biologists.

**Recommendation 3:** Create shallow aquatic benches and/or sculpt pond edges at the locations shown on the Progressive and Final Rehabilitation Plan. Marsh habitats shall be created by planting rooted aquatic plants on these shallow benches and along shallow pond edges. Aquatic plants should include a mixture of Pickerel Weed, Arrowhead, Cattail, Great Bulrush and Burreed. Large woody debris shall also be placed in these areas.

**Recommendation 4:** Avoid vegetation clearing within the licence boundary during the migratory bird breeding season (May 1 to August 15) to ensure that no active nests will be removed or disturbed in accordance with the Migratory Birds Convention Act (1994) and/or Regulations under the Act.

**Recommendation 5:** Establish a general 15m extraction setback along the north and east boundary to protect the potential Eastern Hog-nosed Snake habitat, significant woodlands, the PSW and associated significant wildlife habitats from potential encroachment, accidental vegetation/habitat removal, sedimentation, and potential species encounters the following recommendations are provided. [Figure 7].

**Recommendation 6:** Install Erosion and Sediment Control (ESC)/reptile exclusion fencing along the north and east licence boundary except where the licence boundary is directly adjacent to wetland communities (Community 2 and 3), the ESC/reptile exclusion fencing shall be installed along the 15m extraction setback line [Figure 7].

**Recommendation 7:** ESC/reptile exclusion fencing is to be installed according to the applicable standards established in the Ontario Provincial Standard Specification/Ontario Provincial Standard Drawings (OPSS/OPSD) documents and to the MNR/ Reptile Exclusion Fencing Standards provided in the Reptile and Amphibian Exclusion Fencing: Best Practices, Version 1.1, Species at Risk Branch Technical Note.

**Recommendation 8:** Inspect ESC/reptile exclusion fencing prior to any site excavation to ensure proper installation.

**Recommendation 9:** Once ESC/reptile exclusion fencing is installed and inspected, the un-vegetated land between the existing vegetation edge and the 15m extraction setback shall be seeded with a native grass mixture to improve edge habitats and minimize erosion along the edge of extraction. The native grass mixture shall include a mixture of Virginia Wild Rye, Indian Grass, Little Blue Stem and Switch Grass with some wildflower mix (Milkweed, Aster, Tick-trefoil and Black-eyed Susan).

**Recommendation 10:** During excavation the ESC/reptile exclusion fencing is to be maintained to ensure proper function. Regular maintenance inspections shall occur and shall include a maintenance inspection immediately following snowmelt and heavy rain events.

**Recommendation 11:** Removal of ESC/reptile exclusion fencing can occur once all excavation activities and the rehabilitation are completed.

**Recommendation 12:** A field identification guide for snakes shall be made available to the staff and posted at the site office of the aggregate pit.

**Recommendation 13:** Should an Eastern Hognose snake or any other SAR reptiles be encountered during the operation of the aggregate pit, all extraction activities shall be halted. Any snake movement shall be monitored and vehicular traffic shall be redirected. MNR staff shall be notified immediately and the snake shall be relocated to an appropriate safe habitat by a qualified ecological professional or consultant (i.e., faunal biologist or expert). Once the snake is removed out of harms way, normal extraction activities may resume.

**Recommendation 14:** Topsoil stripping activities shall not take place within 30m of the north and east licence boundary during the breeding season of Wood Thrush and Eastern Wood-Pewee (i.e., May 1 to August 15). This activity can occur in the breeding window if a detailed survey for Wood Thrush and Eastern Wood-Pewee confirms no active nests within 30m of the boundary.

**Recommendation 15:** The pond slopes and lands beyond the pond slopes to the north and east sides not already vegetated shall be planted to establish grassland habitat [Figure 8]. The native grass mixture shall include a mixture of Virginia Wild Rye, Indian Grass, Little Blue Stem and Switch Grass with some wildflower mix (Milkweed, Aster, Tick-trefoil and Black-eyed Susan). The areas beyond the pond slopes on the west and south sides will be restored to agricultural land uses.

**Bank Swallow Habitat Relocation and Maintenance**

- The alternate Bank Swallow nesting site will be created prior to removal of the existing stockpile.
- The alternate nesting site shall be created prior to any works commencing on the site and prior to the installation of Erosion and Sediment Control (ESC) fencing.
- The stockpile shall be created from top soil excavated from the farm field within the proposed Licence Boundary.
- The created topsoil stockpile shall be approximately 15m across at the base and approximately 4m in height.
- The stockpile shall be created in the fall after breeding season is completed (after August 31) and allowed to sit over the winter to compact.
- The stockpile shall be seeded with the same native grass mixture that will be used to vegetate the 15m setback.
- In the following spring, prior to nesting (before April 1), one side of the stockpile shall be excavated to a steep face to encourage Bank Swallow nesting.
- Once the created habitat is completed the existing stockpile shall be removed before April 1.
- Once the stockpile is installed ESC fence shall be installed on the outside to protect the adjacent features from any sedimentation from the stockpile.
- Monitoring of the ESC fence around the stockpile shall be included in the regular maintenance schedule.
- Since the stockpile will be visible from within the Licence Boundary, operators shall include a review of the stockpile at the end of the working day to determine maintenance requirements. Any maintenance, due to slumping to the steep face, shall be completed within 24 hours.
- An overlap of two ends of ESC fence shall be installed at the stockpile access point on the 15m setback line such that ESC fence can be un-installed and peeled back to provide a temporary access to the stockpile from within the extraction limit.
- The opening shall only be enough to allow access for an excavator to repair any slumped materials. The fence overlap shall be at least 1m in length over the adjacent parts of the ESC fence that shall not be opened up.
- The ESC fence shall be re-installed and overlapped to OPSS/OPSD standards once the habitat repairs are completed.

**Hydrogeological Recommendations (by Novaterra Environmental Ltd.)**

1. Fuel storage onsite shall be in compliance with the Technical Standards and Safety Act 2000 and the Liquid Fuels Handling Code 2001, as may be amended.

2. Maintenance and refueling of mobile excavation equipment and other vehicles shall take place in the fuel storage area. Stackers, and screening plants shall be refueled and maintained on the pit floor during daylight hours. Any minor drips or spills shall be immediately cleaned up and properly disposed of.

3. A Spills Plan shall be incorporated into the Site Plans.

4. If any water well is encountered onsite during aggregate extraction, such well shall be decommissioned in accordance to O. Reg. 903.

5. Water levels shall be measured manually on a monthly basis from April to November each year at the following locations:

- Five monitoring wells: MW1, MW2, MW3, MW4, MW5,
- Two piezometers: PZ1 and PZ2,
- One staff gauge (SG1) in Kamoka Creek

- Three staff gauges in local ponds: SG2, SG3, and SG4, Temperature measurements at the four staff gauges (SG) will also be included. Staff gauge SG2 is anticipated to be destroyed by pit operations and will not be re-installed.

6. Data logging pressure transducers, which record water levels and temperature at one-hour intervals, shall be installed in the following locations:

- Monitoring wells MW1, MW4, MW5,
- Piezometer PZ1 and PZ2,
- Staff gauge SG4 (only from April to November annually to prevent damage)

7. At least once annually, measure the thermal regime in Kamoka Creek at SG1 using the method prescribed by Stoneman and Jones (1996). Flow in Kamoka Creek will be measured upon site visits during hydrologic low for two consecutive years after commencement of aggregate extraction.

8. Background groundwater chemical quality in monitoring wells MW2, MW3, MW4, MW5 and Kamoka Creek has been established and shall be used as a baseline for future water quality sampling at the site, if required.

9. The monitoring data collected at Mass Pit will be presented and interpreted in annual monitoring reports prepared by a qualified professional which will include distribution to MNR/ MECF, and UTRCA. The first such report shall serve as a baseline for future impact evaluation.

10. Groundwater level lowering upstream of the future pit pond is not expected to reach beyond monitoring wells MW1 and MW5. If groundwater levels at MW1 and MW5 are lowered below the historical groundwater level at these two wells, a re-assessment of impacts to local wetland shall be undertaken and mitigative measures shall be implemented if necessary.

11. Should an increase in groundwater temperature of 5°C above historical temperature be detected at sentry well MW4, the thermal threat to Kamoka Creek shall be re-assessed and mitigative measures shall be proposed and implemented if necessary. Piezometer PZ1 shall serve to verify predictions and confirm if any implemented mitigative measures are successful.

12. If complaints regarding groundwater interference are received, Water Supply Interference Complaint Response Procedures shall be followed and the licensee shall take appropriate measures as deemed necessary by the MECF and/or MNR/ to rectify the problem(s). The "Water Supply Complaint Response Procedure" (noted in Section 6) shall be implemented on the site plans.

**Water Supply Interference Complaint Response Procedures:**

This response applies to domestic and farm water supplies for properties located in the vicinity of the licensed boundary.

1. Owners of domestic and farm water supplies experiencing disruption or quality problems shall immediately notify the Licensee. The Licensee shall, upon receipt of any water supply disruption complaint, notify the Ministry of Natural Resources and Forestry (MNR/ and the Ministry of Environment, Conservation and Parks (MECP).

2. Should the owner of domestic and farm water supplies experience a significant disruption in their supply of water, or should they experience significant adverse effects upon their water supply; and if the operation of the pit cannot obviously and definitively be excluded as the cause, the licensee shall supply such resident with a temporary water supply within 24 hours and thereafter until the cause of the disturbance can be determined and the situation addressed. The Licensee shall investigate the cause of the water supply disturbance and shall report to the MNR/ MECF and the resident.

3. If, after consultation with the affected resident and the Licensee, the MNR/ and/or the MECF concur that the operation of the pit has caused a domestic or farm water supply to be adversely affected, the Licensee shall, at the Licensee's expense, either restore or replace the water supply to ensure that historic water supply and quality are restored for such a resident.

4. If MNR/ and/or MECF have concurred that the operation of the pit has not caused any domestic or farm water supply to be adversely affected the Licensee shall maintain the temporary water supply provided for under Item 2 for an additional 24 hours to allow the resident to make alternate water supply arrangements.

**Archaeological Recommendations:**

(See the Operational Plan for the locations of the archaeological sites noted below)

1) **Location 1** has further cultural heritage value and Stage 3 testing is recommended. At this time, the proponent has decided to protect the site within the licensed area to allow for the potential to conduct the required archaeological work at a later date. The site would be protected with a 70 m buffer zone that would be demarcated by a post and wire fence that would be erected under the supervision of a licensed archaeologist. This protected area will be clearly depicted on the site operations plan. No machine travel or ground disturbance can occur within the protected area until further archaeological investigations have been completed by a licensed archaeologist and the report for the MTCS has been accepted into the provincial register.

2) **Location 2** has further cultural heritage value and Stage 3 testing is recommended. At this time, the proponent has decided to protect the site within the licensed area to allow for the potential to conduct the required archaeological work at a later date. The site would be protected with a 70 m buffer zone that would be demarcated by a post and wire fence that would be erected under the supervision of a licensed archaeologist. This protected area will be clearly depicted on the site operations plan. No machine travel or ground disturbance can occur within the protected area until further archaeological investigations have been completed by a licensed archaeologist and the report for the MTCS has been accepted into the provincial register.

3) **Location 3** has further cultural heritage value and Stage 3 testing is recommended. At this time, the proponent has decided to protect the site within the licensed area to allow for the potential to conduct the required archaeological work at a later date. The site would be protected with a 20 m buffer zone that would be demarcated by a post and wire fence that would be erected under the supervision of a licensed archaeologist. This protected area will be clearly depicted on the site operations plan. No machine travel or ground disturbance can occur within the protected area until further archaeological investigations have been completed by a licensed archaeologist and the report for the MTCS has been accepted into the provincial register.

When it is decided to conduct any additional archaeological investigations, the Stage 3 shall employ a methodology suitable for large multi- or single-component lithic scatters found solely through a test pit survey (MTC 2011:51, Table 3.1). This would involve the excavation of one-metre units by hand at intervals of 10 metres across the limits of the surface scatter. This would be followed by the excavation of an additional 40% fill units placed in areas of interest. It is recognized that this strategy may not generate enough information to fully inform a Stage 4 recommendation and propose an adequate work strategy; therefore a finer testing interval may be desirable.

**Advice on Compliance with Legislation:**

Should previously undocumented (i.e., unknown or deeply buried) archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the Ontario Heritage Act. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork in compliance with Section 48(1) of the Ontario Heritage Act. Further, archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the Ontario Heritage Act and may not be altered, or have artifacts removed from them, except by a person holding an archaeological licence.

The Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33 requires that any person discovering human remains must notify the police or coroner and the Registrar of Burial Sites, War Graves, Abandoned Cemeteries and Cemetery Closures, Ontario Ministry of Government and Consumer Services. Effective as of January 16, 2016, Nancy Watkins, Senior Policy Analyst, is the new Registrar. Her telephone number is 416 212-7499 and her e-mail address is Nancy.Watkins@ontario.ca.

**Noise Recommendations:**

1. The following table presents the reference sound levels used for the acoustic modeling presented herein. These sound levels were based on site measurements of the processing equipment to be used in this pit.

Equipment Reference	Sound Power level dBA re: 10 <sup>-12</sup> W	Sound Pressure Level dBA at 50 metres
Screening plant with an associated loader	114	70
Excavator / Dragline	107	65
Trucks	104	62

If other equipment is proposed for operation in the gravel pit, it shall be confirmed through measurement to produce sound levels consistent with the above referenced sound levels or additional mitigation measures may be required.

2. A minimum 2.5 m high perimeter berm (above existing grade) shall be constructed along the southern boundary of the pit adjacent to an active working area prior to the commencement of extraction or processing activities in Areas 1 and 2. Once processing and extraction is complete in Area 1 and all activities are moved into Area 2, the berm adjacent to Area 1 shall no longer be required.

3. A minimum 7.0 m high acoustical barrier shall be constructed and maintained on the pit floor beside the screening plant in the direction of all receptors.

4. The screening plant shall not be operated within 250 m of R1, as shown on the Operational Plan.

5. A minimum 4.0 m acoustical barrier shall be constructed and maintained on the pit floor beside the excavator/dragline in the direction of R1 when extraction activities are within 250 m of R1. The top of this barrier shall be located within 15 m of the excavator/dragline.

6. The acoustical barrier mentioned above could be comprised of an earth berm, a noise wall, aggregate stockpiles or any other construction with a minimum surface density of 20 kg/m<sup>2</sup>.

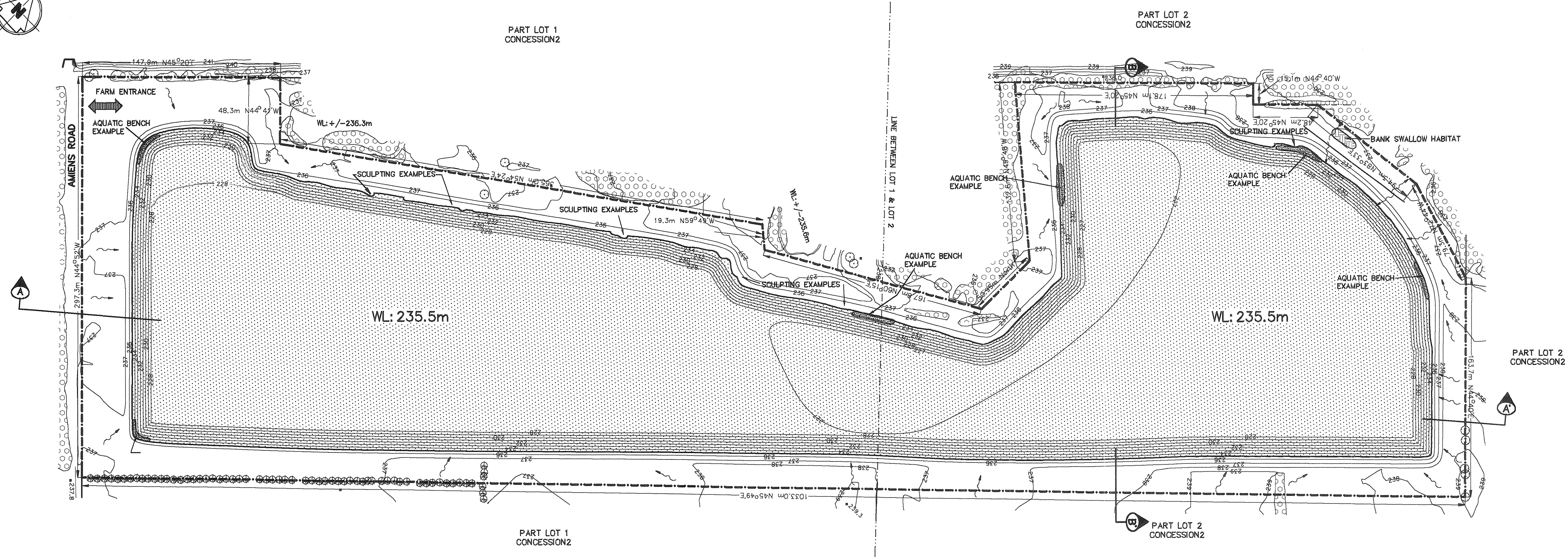
7. Activities used to prepare the site for excavation, such as the stripping of topsoil and construction of berms, or activities related to the remediation of the site after the extraction is completed are considered to be construction activities. They are regulated under municipal bylaws and NPC-115 "Sound Level Limits for Motorized Construction Equipment".

**JOHNSTON BROS. (BOTHWELL) LIMITED**  
21220 JOHNSTON LINE, RR1, WARDSVILLE, ONTARIO, N0L 2N0  
**MAES PIT**  
PART LOTS 1 & 2, CONCESSION 2  
**MUNICIPALITY OF MIDDLESEX CENTRE**  
(FORMERLY THE TOWNSHIP OF LOBO)  
**COUNTY OF MIDDLESEX**

**CONSULTANT RECOMMENDATIONS**  
DRAWING 3 of 4

SCALE 1:2000		
No.	AMENDMENT	DATE



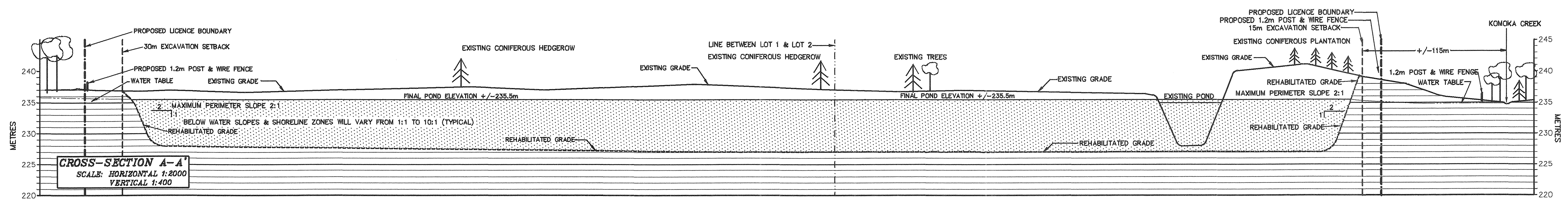


**REHABILITATION NOTES**

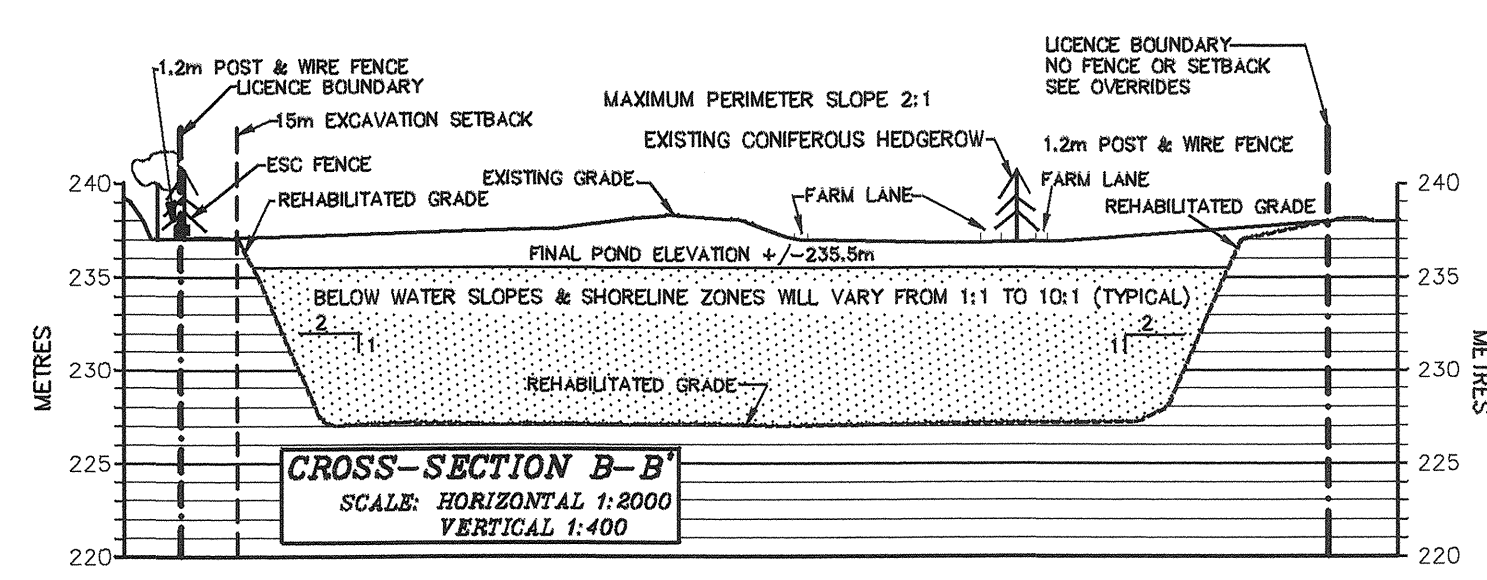
1. The area to be rehabilitated is 21.3 hectares.
2. This site is to be rehabilitated to natural environment and agricultural after uses.
3. The sequence and direction of rehabilitation is as follows: Perimeter slopes shall be rehabilitated as the limits of extraction are reached. Slopes shall be no steeper than 2:1. Below water slopes and shoreline zones will vary from 1:1 to 10:1 to enhance shoreline diversity. Slopes shall be created by excavation or by backfilling with onsite overburden. Slopes shall be spread with topsoil (minimum depth 0.15m) and shall be planted with a native grass seed mix and a native wildflower mix.
4. Rehabilitation operations such as stripping and earth moving shall take place only when the soil is dry to reduce compacting of the soils.
5. Agricultural uses will continue in perimeter areas around the future pond. Where possible the size of the pond will be minimized and the depth maximized. This will keep as much as possible of the rehabilitated areas above water available for agricultural uses.
6. During rehabilitation in the agricultural areas the soils shall be replaced in a manner that approximates the original soil profile. Prior to soil placement compacted areas of the pit floor shall be ripped and scarified. As such, it is expected that the same average soil capability will be restored.
7. Rehabilitated agricultural areas shall be planted with a grass/legume mixture such as alfalfa and red clover. These areas shall be ploughed under in the fall of the first year and reseeded the following spring to enhance soil structure. Sloped areas around the pond shall be planted as outlined in the Natural Environment Recommendations on Drawing 3 of 4.
8. Areas shall be graded to direct drainage towards the pond as shown. Most surface water in perimeter areas will percolate into the ground.
9. Rehabilitated areas are to be re-graded and reseeded in the event of washouts.
10. Any vegetation that dies or is otherwise damaged shall be reseeded or replanted.
11. Shoreline zones may be sculpted where practical to enhance the natural environment aspects and biodiversity of the pond. Examples are shown.
12. Shallow aquatic benches shall be created at various locations along the limit of the proposed aggregate pond. Along the pond edges and on these shallow benches, marsh habitats shall be created by planting rooted aquatic plants as outlined in the Natural Environment Recommendations. Large woody debris and boulders may be placed on the benches depending on availability. Examples are shown. See the detail below.
13. No buildings or structures associated with aggregate operations will remain on site.
14. The pond slopes and lands beyond the pond slopes to the north and east sides not already vegetated shall be planted to establish grassland habitat. The native grass mixture shall include a mixture of Virginia Wild Rye, Indian Grass, Little Blue Stem and Switch Grass with some wildflower mix (Milkweed, Aster, Tick-trefoil and Black-eyed Susan). Beyond pond slopes on the west and south sides will be restored to agricultural land use.

**LEGEND:**

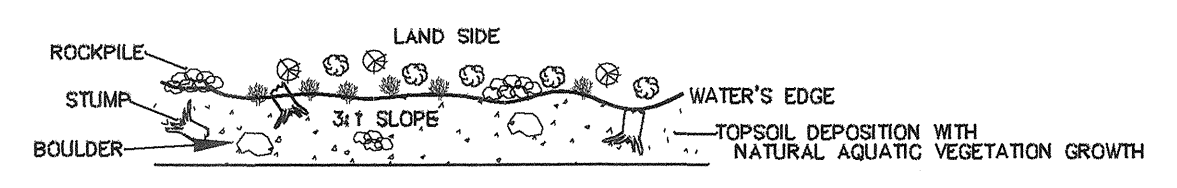
- BUILDING
- EXISTING ENTRANCE/EXIT
- DRAINAGE DIRECTION
- LICENCE BOUNDARY
- 120m OFFSET LINE
- LOT LINE
- 1.2m HIGH FENCE
- SPOT ELEVATION
- 1m CONTOUR
- DECIDUOUS TREE
- CONIFEROUS TREE
- POND FEATURE
- WOODED AREA



**CROSS-SECTION A-A**  
SCALE: HORIZONTAL 1:8000  
VERTICAL 1:400



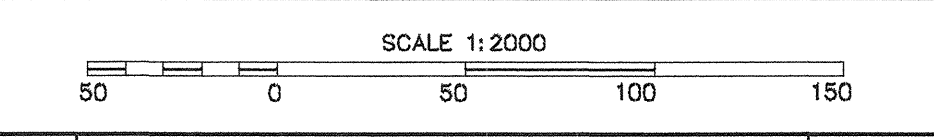
**CROSS-SECTION B-B**  
SCALE: HORIZONTAL 1:8000  
VERTICAL 1:400



AQUATIC BENCH DETAIL (NTS)

**JOHNSTON BROTHERS (BOTHWELL) LIMITED**  
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**MAES PIT**  
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(FORMERLY THE TOWNSHIP OF LOBO)  
COUNTY OF MIDDLESEX

**PROGRESSIVE REHABILITATION AND FINAL REHABILITATION PLANS**  
DRAWING 4 OF 4



No.	AMENDMENT	DATE