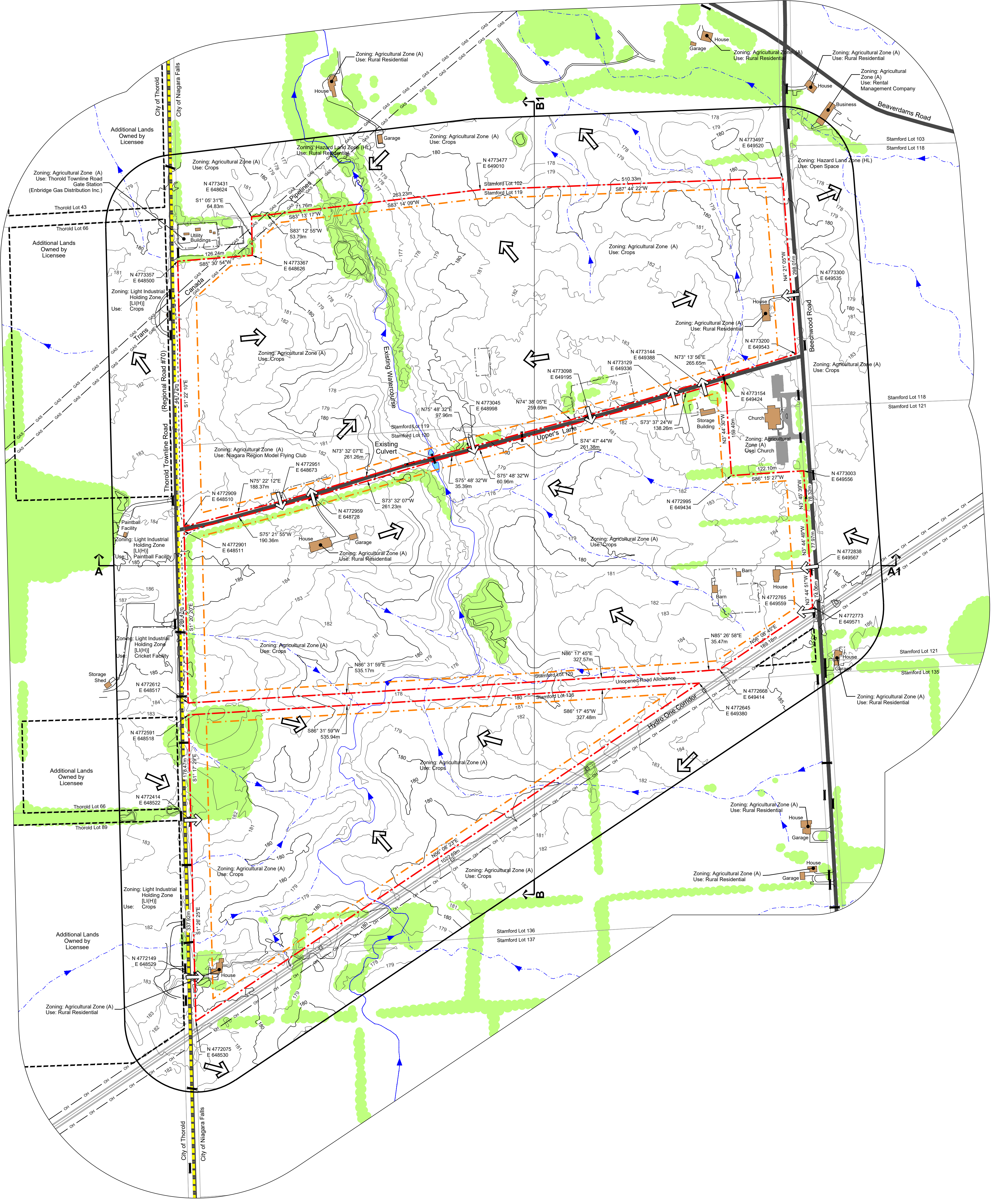


- A. General**
- This Site Plan is prepared under the Aggregate Resources Act for a Class A Licence for a quarry below the ground water table.
  - Area to be licensed 103.6 ha (256.0 ac.)  
Area to be extracted 88.1 ha. (220.2 ac.)
- B. References**
- Contour information was obtained from a topographic survey prepared by TEC Engineering (formerly Renshaw (Canada) Limited) using October 2010 and February 2017 aerial photography and are displayed in one metre intervals. Elevations shown are in metres above sea level (masl).
  - Topographic information was obtained from numerous sources including Ontario Geohub (Land Information Ontario), Google Earth Pro aerial photography captured on July 18, 2018 and field investigations for technical reports.
  - 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.
  - Property boundaries were obtained from a Plan of Survey prepared by Matthews, Cameron, Hoywood-Kerry T. Howe Surveying Ltd. dated April 5, 2012. Other property boundaries were established using Municipal Property Assessment Corporation (MPAC) parcel fabric data.
  - Zoning categories on or within 120 metres of the licence boundary are from the City of Niagara Falls Zoning By-law NO. 79-200 (Schedules A3 and A4 - Consolidation April 2015).
  - Land use information on or within 120 metres of the licence boundary has been compiled from October 2016 ortho photography, site visits and water well survey data.
- C. Groundwater**
- The maximum predicted water table is 184.9 masl and the contact aquifer potentiometric contours ranges between 176.0 and 184.9 masl (as per WSP's "Proposed Upper's Quarry - Maximum Predicted Water Table Report", dated October 2021).
- D. Drainage**
- Existing surface water drainage on and within 120 metres of the licence boundaries are by overland flow in the direction shown by arrows on the plan view.
- E. Site Access and Fencing**
- There are two (2) existing site accesses on Thorold Townline Road, six (6) existing site accesses on Upper's Lane, and three (3) existing site accesses on Beechwood Road.
  - Post and wire fencing (unless otherwise noted) exists in the locations shown on the plan view.
- F. Aggregate Related Site Features**
- There are no existing aggregate operations or features within the licence boundaries such as stationary or portable equipment, stockpiles, recyclable materials, scrap, fuel storage, haul roads, berms or excavation faces.
- G. Technical Reports - References**
- Upper's Quarry: Acoustic Assessment Report, RWDI, October 2021.
  - Agricultural Impact Assessment for Upper's Quarry, Colville Consulting Inc., October 2021.
  - Upper's Quarry: Air Quality Assessment, RWDI Air Inc., October 2021.
  - Archaeological Assessments:
    - Stage 1 Archeological Resource Assessment of Walker Aggregates Proposed South Niagara Quarry, Part of Lots 102, 119, 120, 136 & 137, Archeological Services Inc., December 2008.
    - Stage 1-2 Archeological Assessment of Part 9784 Uppers Lane, Part of Lots 119 & 120, Archeological Assessments Ltd., November 3, 2005.
    - Stage 2-3 Archeological Assessment, Part of Lots 102, 119, 120, 136 & 137, Archeological Assessments Ltd., November 21, 2012.
    - Stage 1-2 Archeological Assessments, Upper's Quarry Additional Lands, Part of Lots 119& 120, Archeological Research Associates Ltd., April 20, 2020.
    - Stage 3 Mitigation of Development Impacts, Final Excavation Report, Walker XI (AgGT-411), Upper's Quarry, Archeological Research Associates Ltd., May 26, 2021.
    - Stage 4 Mitigation of Development Impacts, Final Excavation Report, Walker XI (AgGT-178), Upper's Quarry, Archeological Research Associates Ltd., July 22, 2021.
  - Blast Impact Analysis, Upper's Quarry, Explotech, October 2021.
  - Cultural Heritage Impact Assessment Report, Proposed Upper's Quarry, MHBC, October 2021.
  - Economic Benefits Analysis, Plism, October 2021.
  - Level 2 Water Study Report, WSP, October 2021.
  - Maximum Predicted Water Table Report, WSP, October 2021.
  - Upper's Quarry, Niagara: Level 1 and Level 2 Natural Environment Technical Report and Environmental Impact Study, Stantec, October 2021.
  - Planning Justification Report and Summary Statement, MHBC, October 2021.
  - Traffic Impact Study, Upper's Quarry, TMIG, October 2021.
  - Visual Impact Assessment, Proposed Upper's Quarry, MHBC, October 2021.



**Legal Description**

Part of Lots 119, 120, 136 & 137  
City of Niagara Falls (Geographic Township of Stamford)  
Regional Municipality of Niagara

Licence Boundary	120m Offset From Licence Boundary
Limit of Extraction	Parcel Fabric
Additional Lands Owned by Licensee	Trans Canada Pipeline Easement
Municipal Boundary	Hydro One Easement
Contours with Elevation Metres above sea level (MASL)	Existing Site Access
Public Road	Direction of Surface Drainage
Fence 1.2m post & wire fence unless otherwise noted	Existing Culvert
Watercourse Direction of flow indicated by arrows	Building/Structure
Surface Drainage Feature Direction of flow indicated by arrows	Cross Sections
Water Feature	
Wooded Area	

- Site Plan Acronyms**
- ARA - Aggregate Resources Act
  - MNDMNR - Ministry of Northern Development, Mines, Natural Resources and Forestry
  - MHSTCI - Ministry of Heritage, Sport, Tourism and Culture Industries
  - MECP - Ministry of the Environment, Conservation and Parks
  - MGCS - Ministry of Government and Consumer Services
  - DFO - Department of Fisheries and Oceans Canada
  - ECA - Environmental Compliance Approval
  - BMPP - Best Management Practices Plan
  - PTTW - Permit to Take Water
  - MASL - Metres above sea level
  - ROW - Right of way
  - HMA - Hot mix asphalt

**Site Plan Amendments**

No.	Date	Description	By

**Site Plan Revisions (Pre-Licensing)**

No.	Date	Description	By

**MHBC Stamp**

**Debra Walker**  
Is authorized by the Ministry of Northern Development, Mines, Natural Resources and Forestry pursuant to Section 2 (1) of the Aggregate Resources Act to prepare and certify site plans.

**Christopher Poole**  
Is authorized by the Ministry of Northern Development, Mines, Natural Resources and Forestry pursuant to Section 2 (1) of the Aggregate Resources Act to prepare and certify site plans.

*Debra Walker*      *Christopher Poole*

Applicant

**walker aggregates**

Walker Aggregates Inc.  
2800 Thorold Townline Road  
P.O. Box 100  
Thorold, Ontario  
L2V 3Y8

**Project**  
**Upper's Quarry**

MNDMNR Licence Reference No.      Applicant's Signature

Plan Scale: 1:3000 (Arch E)      Date: October 2021

0      90      180      Meters

Drawn By: C.P.      File No.: 9811V  
Checked By: D.W.

File Name: **Existing Features**

Drawing No.: **1 of 6**

File Path: N:\08\9811V - Walker Upper's Quarry\Drawings\Site Plan\CAD\9811V - Site Plan - Proposed Scenario.dwg



A. General

- 1. Area to be licensed 103.6 ha (s256.0 ac)
Area to be extracted 89.1 ha (s220.2 ac)
2. The maximum amount of aggregate to be removed from this site in any calendar year is 1,800,000 tonnes.
3. In the event that Walker obtains permission from the City of Niagara Falls to extract the road allowance(s), the licensee may apply to the MNDMNRFP to amend the licence and site plan to expand the licence boundary to include the road allowance directly adjacent to the licence boundary (i.e. Upper's Lane and/or the road allowance between Lots 120 and 136). An expansion to the licence boundary for this purpose will not require a new licence under Section 7 of the Aggregate Resources Act (ARA).

B. Hours of Operation

Table with 4 columns: Activity, Monday to Friday, Saturday, Sunday. Rows include Drilling, Extraction, Aggregate processing, and various maintenance tasks.

C. Proposed Entrances/Exits and Fencing

- 1. For the Mid Extraction Area:
a. All traffic for operations will enter and exit the Mid Extraction Area from Upper's Lane using a main entrance/exit in the location generally shown on the plan view.
b. If an entrance/exit off of Upper's Lane is not permitted, traffic for operations will enter and exit the Mid Extraction Area from Thorold Townline Road. If approved, the site plan will be updated to accurately depict the location of the entrance/exit of Thorold Townline Road.

D. Drainage and Siltation Control

- 1. Silt fencing/sediment control measures will be installed within the Watercourse Realignment Transition Area prior to extraction in each extraction area and along the easterly and northerly limits of Phase 1B after the watercourse realignment is completed.

E. Site Preparation

- 1. All existing structures within the licence boundary shall be demolished or removed prior to extraction in each extraction area.
2. Timber resources (if any) will be salvaged for use as saw logs, fence posts and fuel wood where appropriate. Stumps and brush shall be mulched (with applicable permits), used for arborescent habitat enhancement or mulched for use in progressive rehabilitation.

F. Setbacks, Berms and Screening

- 1. Setbacks are as shown on the plan view. Excavation will occur within the extraction setback area along the west and northwest area of the licensed grading required for the realignment of the existing watercourse. Furthermore, areas within the setbacks will be assessed as necessary to perform general site servicing, maintenance (berming, fencing, etc.) and progressive rehabilitation. See Section N Variations from Control and Operation Standards on drawing 2 of 6.

G. Site Dewatering

- 1. Surface water will be discharged from the sump areas to the existing watercourse until the watercourse is realigned to the location of Phases 1B and 2B. Once the watercourse realignment has been completed, surface water will be discharged from the sumps to the realigned watercourse in Phase 1B.

H. Extraction Details

- 1. The extraction sequence is outlined on drawing 3 of 6.
2. The proposed maximum depth of extraction is indicated by the spot elevations shown on the plan view. Extraction shall proceed to a maximum depth of approximately 42 m below ground surface (ranging in elevation from 141 masl in the southwest to 149 masl in the northeast portions of the site), corresponding to the geologic base of the Gasport dolostone of the Lockport Group.

I. Equipment and Processing

- 1. A portable processing plant (including primary, secondary and tertiary crushing and screening units) will be permitted within the North and Mid Extraction Areas in accordance with:
2. Processing shall be located within the limit of extraction and remain a minimum of 30 metres from the licence boundary and 90 metres from a property with a residential use.

J. Frequency / Timing of Blasts

- 1. Prior to blasting being permitted within the 100 m setback of the TransCanada Pipeline, identified as 'TransCanada Blasting Buffer Area' on this Plan, the licensee shall address the requirements of notes D.5 on drawing 4 of 6.

K. Fuel Storage

- 1. Fuel storage tanks will be located in close proximity to the main processing plant (or in an alternative location subject to approval by the MNDMNRFP). Fuel storage tanks shall be installed and maintained in accordance with Technical Standards and Safety Act, 2000, Liquid Fuels Handling Code, 2000 and Liquid Fuels Regulation Reg. 21701.

L. Spills Plan

- 1. In case of an accidental spill of petroleum products, the following contingency plan will be activated:
a. The Ministry of Environment, Conservation and Parks (MECP) (see address and phone number below) and surrounding landowners will be notified.

M. Scrap and Recycling

- 1. Scrap may be stored on-site and shall be removed on an on-going basis.
2. Scrap shall only include material generated directly as a result of the aggregate operation such as refuse, debris, scrap metal, lumber, discarded machinery, equipment and motor vehicles.

N. Variations from Control and Operation Standards

Table with 4 columns: No., Variation, Standard (0.13), and a reference to drawing 9 and 10. Rows describe extraction setbacks, overburden removal, and site preparation.

I. Equipment and Processing

- 1. A portable processing plant (including primary, secondary and tertiary crushing and screening units) will be permitted within the North and Mid Extraction Areas in accordance with:
2. Processing shall be located within the limit of extraction and remain a minimum of 30 metres from the licence boundary and 90 metres from a property with a residential use.

J. Frequency / Timing of Blasts

- 1. Prior to blasting being permitted within the 100 m setback of the TransCanada Pipeline, identified as 'TransCanada Blasting Buffer Area' on this Plan, the licensee shall address the requirements of notes D.5 on drawing 4 of 6.

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- 1. Fuel storage tanks will be located in close proximity to the main processing plant (or in an alternative location subject to approval by the MNDMNRFP). Fuel storage tanks shall be installed and maintained in accordance with Technical Standards and Safety Act, 2000, Liquid Fuels Handling Code, 2000 and Liquid Fuels Regulation Reg. 21701.

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- 1. In case of an accidental spill of petroleum products, the following contingency plan will be activated:
a. The Ministry of Environment, Conservation and Parks (MECP) (see address and phone number below) and surrounding landowners will be notified.

M. Scrap and Recycling

- 1. Scrap may be stored on-site and shall be removed on an on-going basis.
2. Scrap shall only include material generated directly as a result of the aggregate operation such as refuse, debris, scrap metal, lumber, discarded machinery, equipment and motor vehicles.

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Table with 4 columns: No., Variation, Standard (0.13), and a reference to drawing 9 and 10. Rows describe extraction setbacks, overburden removal, and site preparation.

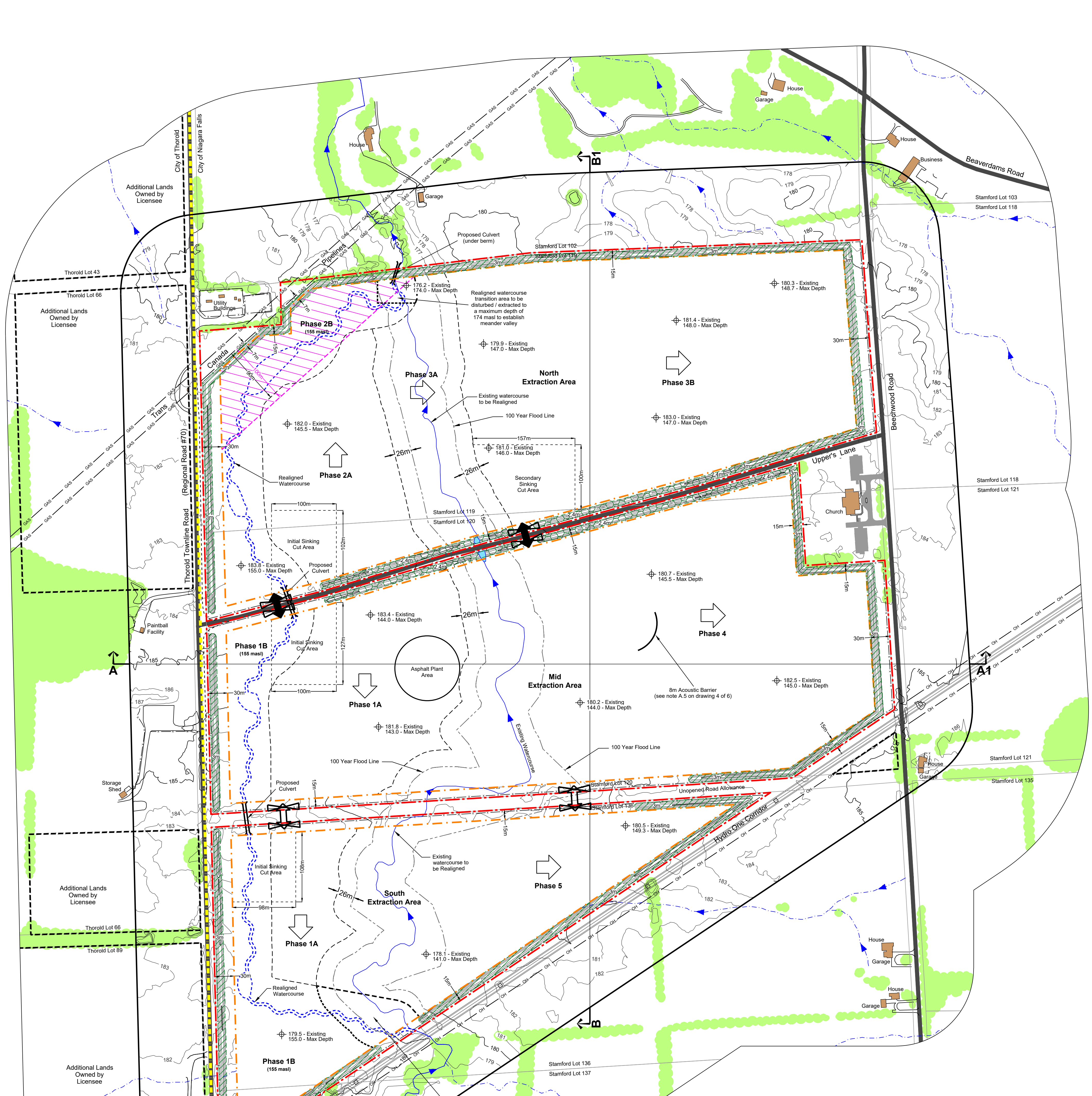
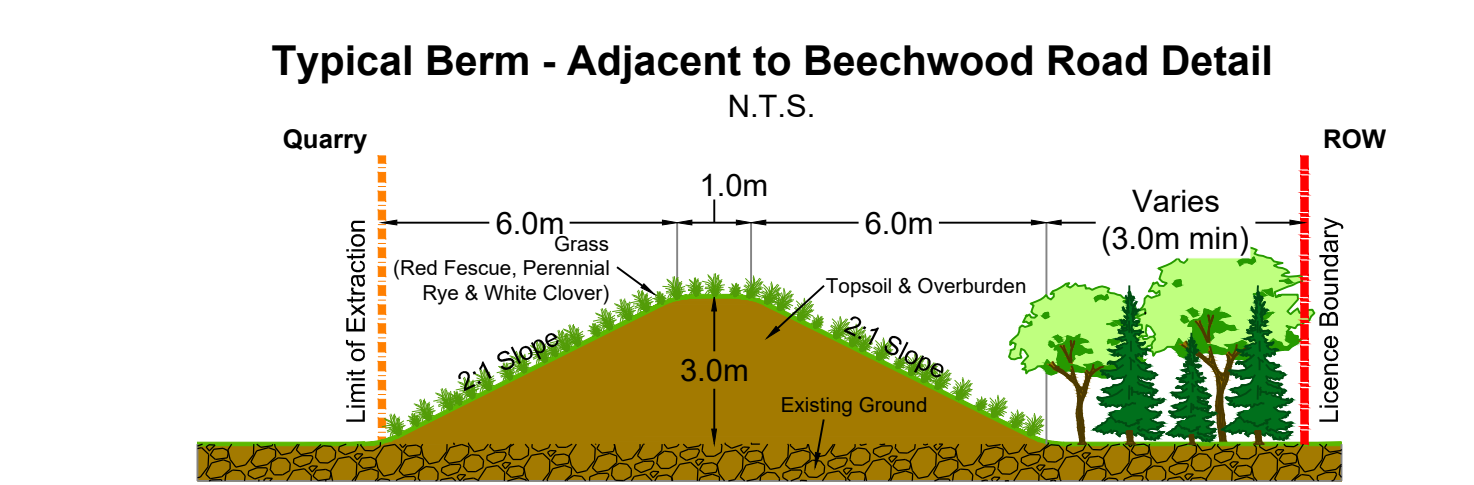
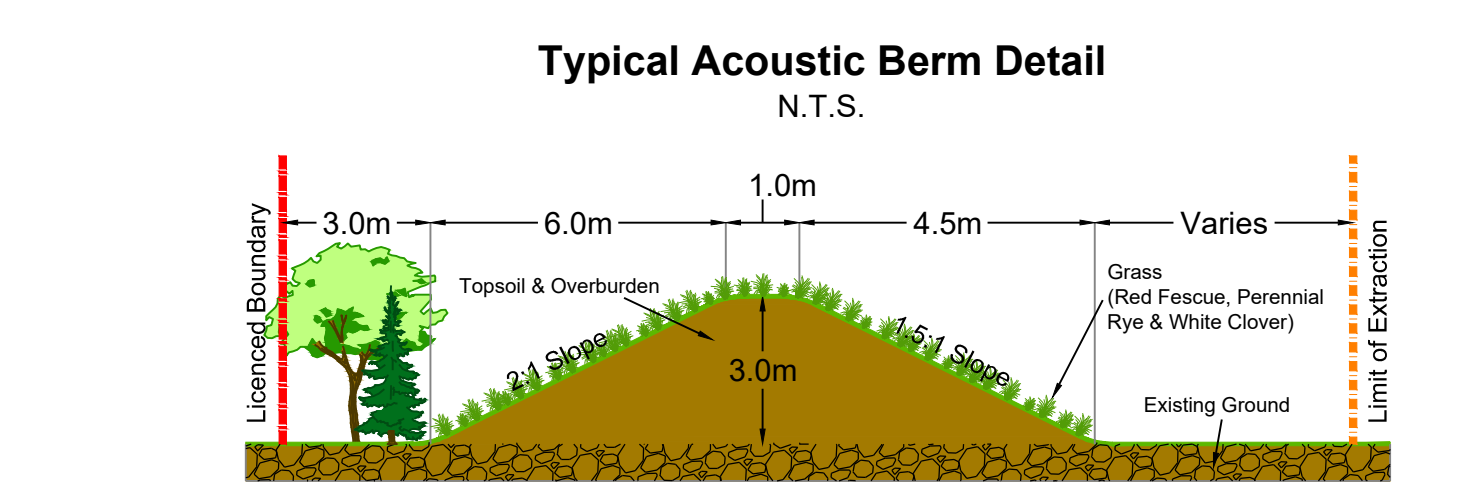


Table 1: Receptors Within 500m of Licence Boundary. Columns include Receptor, Address, Distance, Receptor, Address, Distance, Receptor, Address, Distance, Receptor, Address, Distance.



Legal Description: Part of Lots 119, 120, 136 & 137 City of Niagara Falls (Geographic Township of Stamford) Regional Municipality of Niagara. Legend: Licence Boundary, Limit of Extraction, Additional Lands Owned by Licensee, Municipal Boundary, Contours with Elevation, Public Road, Fence, Watercourse, Surface Drainage Feature, Watercourse - Re-aligned, Water Feature, Wooded Area, 120m Offset From Licence Boundary, Trans Canada Blasting Buffer Area, Parcel Fabric, Trans Canada Pipeline Easement, Hydro One Easement, Entrance / Exit, Limited Surface Access, Gate, Culvert, General Direction of Excavation & Boundary, Berm, Building/Structure, Spot Elevation, Cross Sections.

Site Plan Acronyms: ARA - Aggregate Resources Act, MNDMNRFP - Ministry of Northern Development, Mines, Natural Resources and Forestry, MHSTCI - Ministry of Heritage, Sport, Tourism and Culture Industries, MECP - Ministry of the Environment, Conservation and Parks, MGCS - Ministry of Government and Consumer Services, DFO - Department of Fisheries and Oceans Canada, ECA - Environmental Compliance Approval, BMPP - Best Management Practices Plan, PTTW - Permit to Take Water, MASL - Metres above sea level, ROW - Right of way, HMA - Hot mix asphalt.

Site Plan Amendments table with columns: No., Date, Description, By.

Site Plan Revisions (Pre-Licensing) table with columns: No., Date, Description, By.

MHBC logo and contact information: 113 COLLIER STREET, BARRIE, ON, L4M 1H2 | P: 705.728.0405 F: 705.728.2010 | WWW.MHBCPLAN.COM

MHBC Stamp: Debra Walker, Authorized by the Ministry of Northern Development, Mines, Natural Resources and Forestry pursuant to Section 2 (1) of the Aggregate Resources Act to prepare and certify site plans.

MHBC Stamp: Christopher Poole, Authorized by the Ministry of Northern Development, Mines, Natural Resources and Forestry pursuant to Section 2 (1) of the Aggregate Resources Act to prepare and certify site plans.

Applicant: Walker Aggregates Inc. 2800 Thorold Townline Road P.O. Box 100 Thorold, Ontario L2V 3Y8. Project: Upper's Quarry. MNDMNRFP Licence Reference No. Applicant's Signature. Date: October 2021. Plan Scale: 1:3000 (Arch E). Drawn By: C.P., File No: 9811V. Checked By: D.W.

Operational Plan. Drawing No. 2 of 6. File Path: N:\9811V - Walker Upper's Quarry\Drawings\Site Plan\CAD\9811V - Site Plan - Proposed Scenario.dwg



**A. General**

- This plan depicts a schematic operations sequence for the property based on the best information available at the time of preparation.
- Phases do not represent any specific or equal time period.
- The direction of extraction will generally be in accordance with the General Direction of Excavation (shown on the plan view). Notwithstanding the operational and rehabilitation notes, demand for certain products, blending of materials or Water Study Contingency measures may require minor deviations in the extraction and rehabilitation sequence.
- Progressive and final rehabilitation will be completed in direct correlation to the development of the quarry as the extraction limits are reached and enough area is available to ensure that rehabilitation activities will not interfere with the production, stockpiling and processing of aggregate materials.

**B. Initial Site Preparation**

- Generally, site preparation in Phases 1 and 2 to include but not limited to:
  - Constructing the main entrance and cross over(s) in accordance with entrance permit approvals
  - Establishing fencing around licensed boundary (see Section N Variations from Control and Operation Standards on drawing 2 of 6)
  - Removal of trees and existing buildings (in accordance with all site plan requirements and applicable regulations)
  - Proceed with stripping of overburden/topsoil from Phase 1 and, if necessary, Phase 2
  - Construction of bents/acoustic barriers within the perimeter setback of the licence boundary (as shown on the plan view)
- Install water management and erosion and sediment control measures (silt fencing) in accordance with note D.1 on this drawing and note E.1.c on drawing 4 of 6.
- Commence portable crushing/screening plant set up. The plant shall operate in accordance with Section A on drawing 4 of 6 for all Phases.

**C. Phase 1 (1A and 1B)**

- Commence extraction in the 'Initial Sinking Cut Area' identified in the Mid Extraction Area (see plan view for location).
- Phase 1A shall be extracted in up to three (3) lifts to a depth ranging between 140 mast and 145 mast.
- Phase 1B shall be extracted in one (1) to two (2) lifts to a depth of 155 mast.
- A portable pump shall be utilized as necessary in the Mid Extraction Area and the South Extraction Area to discharge water to a man-made pond for aggregate washing or to a sediment forebay before being discharged to the existing watercourse. During heavy rainfall events (25 mm or more), the pump will be deactivated as necessary to prevent flooding along the watercourse downstream of the site. The discharge pond and forebay locations will move with the quarry face until the final quarry depth is reached in each extraction area. At this point, a permanent sump will be established in each extraction area.
- During Phase 1, a new watercourse channel shall be constructed along the east side of Thorold Townline Road (within Phase 1B) for the eventual realignment of the existing watercourse. As resource extraction is completed in Phase 1B, this area will be filled with clay overburden material from on-site to an elevation ranging between 173 to 175 mast. The new watercourse and riparian wetland channel shall be constructed, designed and vegetated in accordance with DFO's authorization and this Rehabilitation Plan (drawing 5 of 6).
- As extraction reaches the final quarry floor, and there is sufficient separation from the quarry floor working areas in Phase 1A, a 2:1 sideslope along the easterly and northerly limit of Phase 1B shall be backfilled with either: (i) overburden stockpiled on-site; (ii) overburden in Phase 2; or (iii) material imported from Licence Numbers 11175 and 4437.
- Commence site preparation of Phase 2.

**D. Phase 2 (2A & 2B)**

- Commence extraction in the 'Initial Sinking Cut Area' identified in the North Extraction Area (see plan view for location).
- Phase 2A shall be extracted in up to three (3) lifts to a depth ranging between 141 mast to 145 mast.
- Phase 2B shall be extracted in one (1) to two (2) lifts to a depth of 155 mast.

- A portable pump shall be utilized as necessary to discharge water to a man-made pond for aggregate washing or to a sediment forebay before being discharged to the existing watercourse. During heavy rainfall events (25 mm or more), the pump will be deactivated as necessary to prevent flooding along the watercourse downstream of the site. The discharge pond and forebay locations will move with the quarry face until the final quarry depth is reached. At this point, a permanent sump will be established.
- Similar to Phase 1, the new watercourse channel shall be constructed within Phase 2 running along the east side of Thorold Townline Road (Phase 2B) for the eventual realignment of the existing watercourse. As resource extraction is completed in Phase 2B, this area will be filled with clay overburden material from on-site to an elevation ranging between 173 to 175 mast. The new watercourse and riparian wetland channel will be constructed, designed and vegetated in accordance with DFO authorization and Rehabilitation Plan (drawing 5 of 6).
- As extraction reaches the final quarry floor, and there is sufficient separation from the quarry floor working areas in Phase 2A, a 2:1 sideslope along the easterly and northerly limit of Phase 2B shall be backfilled with either: (i) overburden stockpiled on-site; (ii) overburden in Phase 3B; or (iii) material imported from Licence Numbers 11175 and 4437.
- Commence site preparation of Phase 3.

**E. Phase 3 (3A & 3B)**

- Proceed with stripping of overburden/topsoil.
- Prior to undertaking any works within Phase 3A that may result in any serious harm to fish, according to 35(1) of the Fisheries Act, the Licensee shall obtain a Fisheries Act Authorization from the Department of Fisheries and Oceans (DFO) and shall fulfill any other conditions required by the DFO as stated on its authorization. Once the watercourse has been realigned to the satisfaction of DFO, stripping of overburden and topsoil can proceed in Phase 3A.
- In the event that watercourse relocation has not been approved or completed, extraction in Phase 3B may proceed before extraction in Phase 3A.
- In the event that Phase 3B is extracted before Phase 3A, a portable pump shall be utilized as necessary to discharge water to a man-made pond for aggregate washing or to a sediment forebay before being discharged to the existing watercourse. During heavy rainfall events (25 mm or more), the pump will be deactivated as necessary to prevent flooding along the watercourse downstream of the site. The discharge pond and forebay locations will move with the quarry face until the final quarry depth is reached. At this point, a permanent sump will be established.
- Phase 3A and 3B shall be extracted in up to three (3) lifts to a depth ranging between 145 mast to 149 mast. Extraction will proceed in an easterly direction, moving gradually from north to south.
- Once the existing watercourse has been realigned, extraction in Phase 3A may proceed.
- Continue progressive rehabilitation of the quarry perimeter where limits of extraction have been reached and there is sufficient separation from the quarry floor working areas.
- Commence site preparation of Phase 4.

**F. Phase 4**

- Proceed with stripping of overburden/topsoil.
- Commence Phase 4 extraction in an easterly direction, moving gradually from north to south.
- Phase 4 shall be extracted in up to three (3) lifts to a depth ranging between 142 mast and 147 mast.
- Continue progressive rehabilitation of the quarry perimeter where limits of extraction have been reached and there is sufficient separation from the quarry floor working areas.

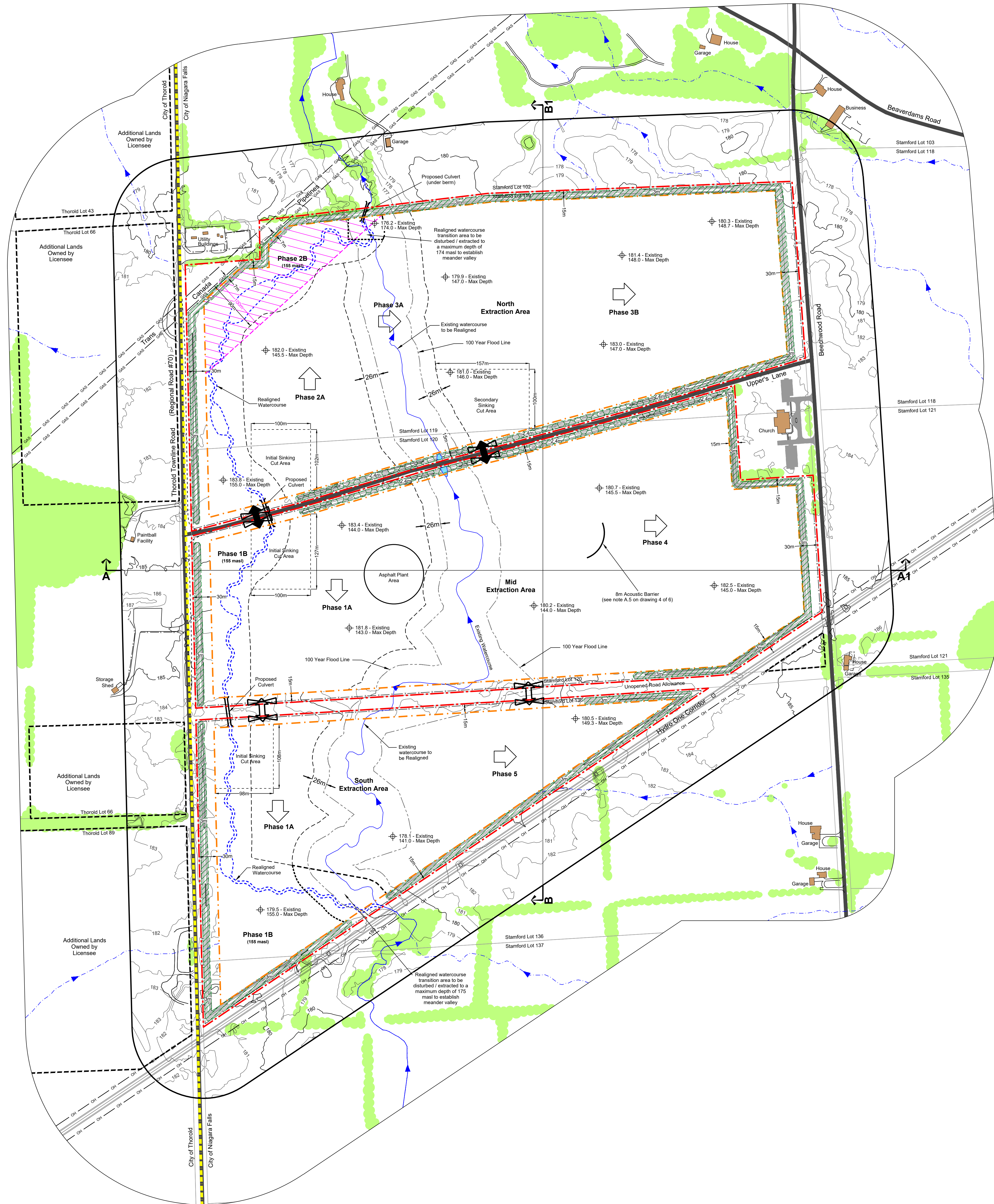
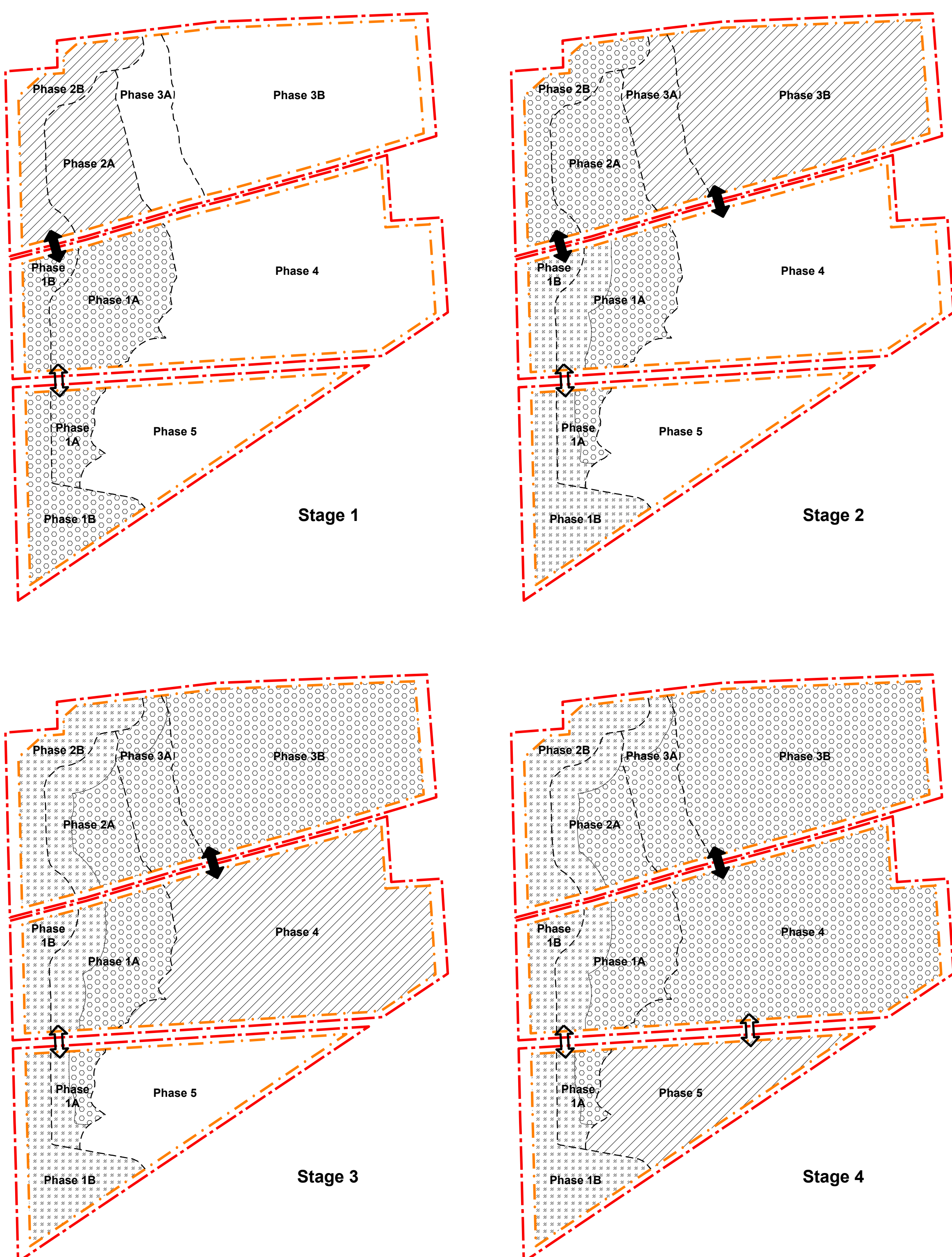
**G. Phase 5**

- Proceed with stripping of overburden/topsoil.
- Commence Phase 5 extraction in an easterly direction, moving gradually from north to south.
- Phase 5 shall be extracted in up to three (3) lifts to a depth ranging between 140 mast and 143 mast.
- Continue progressive rehabilitation of the quarry perimeter where limits of extraction have been reached and there is sufficient separation from the quarry floor working areas.

**H. Final Phase**

- Complete extraction of any remaining resource in the extraction limit near the entrance in Phase 1A and 1B (e.g. ramp).
- As part of the final operations of the site, remove official/scale house and scales and any other equipment and scrap from the site.
- Continue with final rehabilitation of the site. Complete quarry face backfilling on the remaining quarry faces as identified on drawing 5 of 6.

**Extraction Sequence Schematic**  
Scale 1:7500



**Legal Description**

Part of Lots 119, 120, 136 & 137  
City of Niagara Falls (Geographic Township of Stamford)  
Regional Municipality of Niagara

**Legend**

- Licence Boundary
- Limit of Extraction
- Additional Lands Owned by Licensee
- Municipal Boundary
- Contours with Elevation (Metres above sea level (MASL))
- Public Road
- Fence (2 post & wire fence unless otherwise noted)
- Watercourse (Direction of flow indicated by arrows)
- Surface Drainage Feature (Direction of flow indicated by arrows)
- Watercourse - Realigned (Status: 2023)
- Water Feature
- Wooded Area
- 120m Offset From Licence Boundary
- Trans Canada Blasting Buffer Area (See Note D.3 on drawing 4 of 6)
- Parcel Fabric
- Trans Canada Pipeline Easement
- Hydro One Easement
- Entrance / Exit
- Limited Service Access (For Phases 1A, 1B and 5 in South Extraction Area)
- Gate
- Culvert
- General Direction of Excavation & Boundary
- Berm (Top - House Allocation Berm, Bottom - Visual Berm)
- Building/Structure
- Spot Elevation (Top - Existing, Bottom - Maximum Depth of Extraction)
- Cross Sections (A1)

**Site Plan Acronyms**

- ARA - Aggregate Resources Act
- MNDMRF - Ministry of Northern Development, Mines, Natural Resources and Forestry
- MHSTCI - Ministry of Heritage, Sport, Tourism and Culture Industries
- MECP - Ministry of the Environment, Conservation and Parks
- MGCS - Ministry of Government and Consumer Services
- DFO - Department of Fisheries and Oceans Canada
- ECA - Environmental Compliance Approval
- BMP - Best Management Practices Plan
- PTTW - Permit to Take Water
- MASL - Metres above sea level
- ROW - Right of way
- HMA - Hot mix asphalt

**Site Plan Amendments**

No.	Date	Description	By

**Site Plan Revisions (Pre-Licensing)**

No.	Date	Description	By

**MHBC**  
PLANNING  
URBAN DESIGN  
& LANDSCAPE  
ARCHITECTURE  
113 COLLIER STREET, BARRE, ON, L4M 1H2 | P: 705.728.0945 | F: 705.728.2010 | WWW.MHBCA1.COM

**MHBC Stamp**

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Is authorized by the Ministry of Northern Development, Mines, Natural Resources and Forestry pursuant to Section 2 (1) of the Aggregate Resources Act to prepare and certify site plans.

**MHBC Stamp**

Christopher Poole  
Is authorized by the Ministry of Northern Development, Mines, Natural Resources and Forestry pursuant to Section 2 (1) of the Aggregate Resources Act to prepare and certify site plans.

**Applicant**

**walker aggregates**  
Walker Aggregates Inc.  
2800 Thorold Townline Road  
P.O. Box 100  
Thorold, Ontario  
L2V 3Y8

<b>Project</b>	<b>Upper's Quarry</b>		
<b>MNDMRF Licence Reference No.</b>	<b>Applicant's Signature</b>		
<b>Plan Scale: 1:3000 (Arch E)</b>	<b>Date</b>	<b>October 2021</b>	
	<b>Drawn By</b>	<b>C.P.</b>	<b>File No.</b>
<b>File Name</b>	<b>Checked By</b>	<b>D.W.</b>	<b>9811V</b>

**Extraction Sequence**  
Drawing No. **3 of 6**

File Path: N:\9811V - Walker Upper's Quarry\Drawings\Site Plan\CAD\9811V - Site Plan - Proposed Scenario.dwg



**A. Acoustic Assessment**

- 1. Minimum 3 metre tall acoustic berms shall be constructed in the locations shown on the plan view.
2. The acoustic berms shall be constructed during site preparation and prior to extraction.
3. The primary crusher shall stay within 30 metres of the working face to maximize shielding effect of the quarry terrain.
4. Material extracted from the South Extraction Area shall be processed in the Mid Extraction Area.
5. While processing in Phase 4, the licensee shall maintain an 8 metre tall barrier at a radius of 40 metres to the southeast of the processing plant's secondary crushers (see plan view for location). The barrier can be material stockpiles, noise walls, or a combination of both. The barrier shall extend long enough to shield receptors R4 and R5 (see plan view) from the secondary crushers.
6. All construction equipment shall meet the sound emission standards defined in MECP Publication NPC-115.
7. The following best practice measures shall be undertaken to minimize the potential for construction noise impacts:
a. Construction will be limited to time periods allowed by the City's applicable bylaws. If construction activities are required outside of these hours, the licensee will seek permits / exemptions directly from the City in advance.
b. All internal combustion engines will be fitted with appropriate muffler systems.
c. The licensee's operating procedures will contain a provision that any initial complaint will trigger verification that the general noise control measures agreed to on this Plan are in effect.
d. In the presence of persistent noise complaints, all construction equipment will be verified to comply with MECP's NPC-115 guidelines.
e. In the event of verified noise complaints, alternative noise control measures may be required where reasonably available. In selecting appropriate noise control and mitigation measures, consideration will be given to the technical, administrative and economic feasibility of the various alternatives.

**B. Air Quality**

- 1. The licensee shall apply water or another provincially approved dust suppressant to internal haul roads and processing areas, as necessary to mitigate dust.
2. Processing equipment shall be equipped with dust suppressing or collection devices, where the equipment creates dust and is operating within 300 metres of an air quality sensitive receptor (as set out in the Air Quality Impact Assessment).
3. The licensee shall obtain an environmental compliance approval under the Environmental Protection Act where required to carry out operations at the quarry.
4. The site will operate in accordance with the Best Management Practices Plan (BMP) for Fugitive Dust Emissions. The BMPP may be amended from time to time, considering actual impacts and operational considerations. The recommendations in the BMPP in the maximum likely production rates. At lower production rates, the control measures specified in the BMPP can be reduced accordingly, provided dust remains mitigated on site.
5. The following mitigation measures shall be incorporated into the BMPP:
a. Blasting operations occurring within 300 metres of a residential receptor shall have a smaller blast area, not exceeding 200 m² in area.
b. Aggregate extraction, processing and shipping does not exceed 9,000 tonnes per day.

**C. Archaeology**

- 1. Any areas identified as 'Archaeological Site - Protected Area Requiring Further Archaeological Assessment' on this drawing reflect areas that require further archaeological assessment and are protected by a 20 to 30 metre protective buffer. A 50 metre monitoring buffer is also identified on this drawing.
2. No ground alterations including overburden stripping and excavation, or development of any kind shall occur within areas identified as 'Archaeological Site - Protected Area Requiring Further Archaeological Assessment' and their respective protective buffers until:
a. the required investigations are completed in accordance with the Stage 1 and 2 Archaeological Assessment prepared by Archaeological Research Associates Ltd. (April 2020),
b. any recommendations that the proposed site(s) has no further cultural heritage value or interest are made as a result of completing further investigations, and,
c. the associated reports are entered into the Ontario Public Register of Archaeological Reports.
3. A temporary barrier shall be established around the perimeter of each 'Archaeological Site - Protected Area Requiring Further Archaeological Assessment' identified on this drawing as part of site preparation and in advance of extraction.
4. All soil disturbing activities within the 50 metre monitoring buffers shall be monitored by a licensed archaeologist to ensure the effectiveness of the avoidance strategy. The archaeologist shall ensure that the temporary barrier is in the appropriate location and shall be empowered to stop construction if there is a concern for impacts to an archaeological site. No go instructions shall be issued to all work crews for the protected areas, and the locations of the protected areas shall be shown on all appropriate contract drawings. The protected areas shall be inspected by a licensed archaeologist once the strategy is no longer required, and the effectiveness of the strategy shall be reported to the MHSTCI.
5. Immediately upon issuance of the License, and once the construction schedule has been finalized, a licensed archaeologist will be retained by the licensee so that monitoring can occur where required. The remaining archaeological fieldwork will be completed upon issuance of the license by the MNDMNRP.
6. Should deeply buried archaeology remains be found during the course of site preparation and/or extraction related activities, the MHSTCI shall be notified.
7. In the event that human remains are encountered during construction or extraction activities, the licensee shall immediately contact both the MHSTCI and Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ministry of Government and Consumer Services (MGCS).

**D. Blasting**

- 1. An alteration study shall be undertaken by an independent blasting consultant during the first 12 months of operation in order to obtain sufficient quarry data to confirm the initial guideline parameters and assist in refining future blast designs.
2. 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.
3. Blasts shall be designed to maintain vibrations below 13mm/s at the location of the closest identified active spanning bed as per DFO guidelines. 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 the vibration levels.
4. 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.
5. All blasts shall be monitored for ground vibration at the adjacent Trans Canada Energy High Pressure Natural Gas Pipeline when blasting within 100m of the pipeline or when calculations suggest vibrations in excess of 35mm/s.
6. Blasts shall be designed to maintain vibrations at the transmission towers in the Hydro One Corridor below 50mm/s or any such document, regulation or corporate policy in effect at the time. When vibration calculations suggest vibrations at the towers may exceed 35mm/s, the towers shall be monitored for ground vibration.
7. Blasts shall be designed to maintain vibrations at the 4322 Thorold Townline Road utility buildings below 50mm/s. When vibration calculations suggest vibrations at the utility buildings may exceed 35mm/s, the buildings shall be monitored for ground vibration.
8. The guideline limits for ground vibration and air 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.
9. Orientation of the aggregate extraction operation shall be designed and maintained so that the direction of the overpressure propagation will be away from structures as much as possible.
10. Blast designs shall be continually reviewed with respect to fragmentation, ground vibration and overpressure. Blast designs shall be modified as required to maintain compliance with current applicable guidelines and regulations.
11. Detailed blast records shall be maintained in accordance with current industry best practices.

**E. Natural Heritage**

- 1. General
a. Existing vegetation within the setbacks shall be maintained except where berms, haul roads and conveyors are required.
b. New vegetation shall be maintained in accordance with note G.5 on this drawing.
c. Silt fencing shall be installed at the easterly limit of Phases 1A and 2A where field drainage enters the existing watercourse. Silt fencing will serve to demarcate the limit of protected area until the watercourse is diverted.
d. Stockpiling of all excavated material shall be in accordance with note H.7 on drawing 2 of 6.
e. Topsoil and overburden stockpiles shall be maintained in accordance with the Best Management Practices for the Protection, Creation and Maintenance of Bank Swallow Habitat in Ontario (MNR 2017). Stripped overburden and topsoil for rehabilitation shall be utilized in accordance with notes E.4, E.5, E.6 and E.8 on drawing 2 of 6.
f. Dust control will be implemented in accordance with Section B on this drawing.
g. Fuel storage shall be in accordance with the notes under Section K on drawing 2 of 6.
2. Natural Channel Design
a. The existing watercourse will remain open (not culverted) where it enters the south limit of the South Extraction Area.
b. Where the watercourse exits the North Extraction Area, a culvert will be installed to maintain the watercourse while allowing an acoustic berm to be constructed. As part of final rehabilitation, the berm and culvert shall be removed to allow for the watercourse to be open.
c. As part of site preparation, a compensation pond will be constructed in the Watercourse Realignment Transition Area within Phase 2B, in accordance with the Natural Channel Design Report (Stantec 2021). The compensation pond will be excavated to a maximum depth of 174 mm in this area and in accordance with DFO authorization. No drilling or blasting shall occur in this Transition Area.
d. As extraction is completed in Phases 1B and 2B, these areas will be filled with clay overburden material to an elevation ranging between 173 to 178 masl. In accordance with the Natural Channel Design Report (Stantec 2021), a new watercourse channel will be constructed, vegetated and designed in these areas and will include the following design elements:
1. Floodplain wetlands
2. Fish habitat ponds, including new pike spawning habitat as well as foraging, spawning and rearing habitat for other fish species
3. Creek sections
4. Wood debris toe protection and wood reinforced banks
5. Log sills
6. Augmented riffle.
e. Culverts will be installed under Upper's Lane and the unopened road allowance.
f. 2:1 side slopes shall be established on the east side of the new watercourse channel down to the quarry floor.
g. Once the realigned watercourse has been constructed in Phases 1B and 2B and adequate vegetation has been established, as confirmed by an ecological water survey, the existing watercourse will be diverted to the realigned watercourse in consultation with regulatory authorities.

**F. Traffic**

- 1. Prior to commencement of extraction operations, the required entrance improvements, road improvements and road widening (to Thorold Townline Road) shall be completed to the satisfaction of the applicable road authorities and in general accordance with the figures titled "Upper's Lane Conceptual Intersection Design" and "Upper's Lane Vehicle Movement Diagram" provided on this drawing.

**G. Visual**

- 1. Where possible and to the extent to which it is present, existing vegetation located along the site perimeter within the setback area shall be retained.
2. 3.0 metre high acoustic berms and 2.4 metre high visual berms shall be established in the locations shown on the plan view. Berms shall be constructed in a smooth, rolling manner with varying highpoints (where space permits while respecting minimum setbacks, height requirements), and variations along the berm frontage to create a more natural appearance. Berms shall be seeded with a naturalizing mix of wildflowers and grasses to stabilize slopes and minimize erosion and maintenance.
3. Within the "Extended Planting Areas" (as shown on this drawing), trees shall be planted at a spacing of 5 to 10 metres on centre, depending on species. Where possible, plantings shall be randomly spaced and staggered up on the berm up to one third of its maximum height to appear more natural. Plantings shall also extend a minimum of 3 metres out from the berm towards the road where available space permits. All vegetation shall be selected for wind and salt tolerance and hardiness. Native species that complement the existing surroundings shall be utilized.
Where "Large Planting Stock" is indicated (see plan view and "Typical Visual Berm Detail" on this drawing), this area shall be planted with deciduous trees of minimum 40 millimetres caliper, coniferous trees of minimum 1.0 metre in height, and shrub species of minimum 60 centimetres height.
Where "Small Planting Stock" is indicated (see plan view and "Typical Visual Berm Detail" on this drawing), this area shall be planted with deciduous tree whips of minimum 1.2 metres in height, coniferous trees of minimum 0.6 metre in height, and shrub species of minimum 20 centimetres height (or bare root stock in winter in season).
Planting shall occur for 40 metre stretches on either side of Upper's Lane and the unopened road allowance facing Thorold Townline Road. The large planting stock shall be planted 3 metres beyond the berm and small planting stock shall extend from the toe of the berm to 2 metres up the berm.
Plant species for berms may include, but shall not be limited to the following:
Trees
White Pine, Common Hackberry, Chokecherry, White Spruce, Paper Birch, Pin Oak, Trembling Aspen, Basswood, White Pine, White Cedar.
Shrubs
Staghorn Sumac, Nannyberry, Common Nettlebark, American Elder, Dogwood, Highbush Cranberry.
4. To ensure survival and positive growth rate, the vegetative screening shall be maintained as an effective visual screen over time. Allowance of natural succession is encouraged.
5. During the first year, planted trees shall be watered and monitored until established. After the first year and up to five years, trees shall be inspected biannually (end of Year 1, beginning of Year 3 and end of Year 4). Trees which are in poor condition at the time shall be fertilized, watered and monitored to improve their health and vigor.
6. A mortality rate of up to 15% of all trees planted over the course of the five year maintenance period is expected. Trees that exceed this percentage shall be replaced yearly, preferably in the spring or late summer.

**H. Water Study**

- 1. A long-term monitoring program will be implemented during the quarry operational and rehabilitation phases, until stable conditions are observed after quarry decommissioning.
2. In the event a well interference claim is received, the licensee shall implement the following mitigation plan to protect the local groundwater users:
a. Prior to extraction, landowners shall be provided with a copy of the water well interference plan as well as the contact information for the licensee and MECP (Wells Help Desk 1-888-396-9355 or email wells@ec.gc.ca).
b. If a water well interference claim is received by the licensee the following actions shall be taken:
1. The licensee shall immediately notify MNDMNRP and MECP of the complaint.
2. The licensee shall contact a well contractor in the event of a well malfunction and residents will be provided a temporary water supply within 24 hours, if the issue cannot be easily determined and rectified.
3. The well contractor shall contact the resident with the supply issue to rectify the problem as expeditiously as possible, provided landowner authorization of the work.
c. If the issue raised by the landowner is related to loss of water supply, the licensee shall have a qualified hydrogeologist / well 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 licensee shall continue to supply water at their 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. The licensee is responsible for the expense to restore the water quality.
d. If it has been determined that the quarry caused the water supply interference (i.e., lowering of the water level), the licensee shall continue to supply water at their 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:
1. Adjust pump pressure;
2. Lowering of the pump to take advantage of existing water storage within the well;
3. Deepening of the well to increase the available drawdown, if the well deepening changes the water quality a water treatment shall be provided;
4. Widening of the well to increase the available storage of water;
5. Relocation of the well to another area on the property; or
6. Drilling multiple wells.
f. If the issue raised by the landowner is related to water quality, the licensee shall have a qualified hydrogeologist / well 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 licensee shall continue to supply water at their 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. The licensee is responsible for the expense to restore the water quality.

**I. Woodland and Wildlife Habitat Compensation Plan**

- a. The lands identified on-site as Deciduous Woodland, Tree Deciduous Swamp and Swamp Thicket / Marsh Meadow on drawing 5 of 6, an area of 4.0 ha, shall be planted in accordance with the Rehabilitation Plan.
d. Planting for the off-site woodland compensation will commence in the appropriate planting season following licence approval.

**J. Fish and Fish Habitat**

- a. Vegetation clearing where milkweed plants are present will proceed when monarch larvae are absent (September 30 to April 1).
b. The setbacks along Thorold Townline Road and Beechwood Road shall be planted with a mix of deciduous and coniferous trees and shrubs with a range of sizes. Native plant materials that are complementary to the regional and local landscape shall be used (see Rehabilitation Plan, drawing 5 of 6).

**K. Wetlands**

- a. Wetlands along the existing watercourse will be maintained until the watercourse has been diverted to the watercourse realignment channel.
b. Once the watercourse has been diverted, the created wetlands in the watercourse realignment channel shall be maintained.

**L. Monitoring Program**

- a. A monitoring plan shall be prepared in consultation with regulatory authorities to assess the performance of the watercourse realignment channel and to confirm that impacts to off-site wetlands are not occurring as a result of dewatering.
b. A monitoring program of compensation planting shall be prepared in consultation with regulatory authorities to confirm stable conditions have been established.
c. A trigger mechanism and contingency plan, as detailed in WSP's Water Study Report, shall be implemented upon licence approval to proactively ensure natural heritage features and their functions are maintained (i.e. fish habitat, wetland features downstream and 5554 Beechwood Road, and woodlands during operational and rehabilitation phases).

**M. Plant Species**

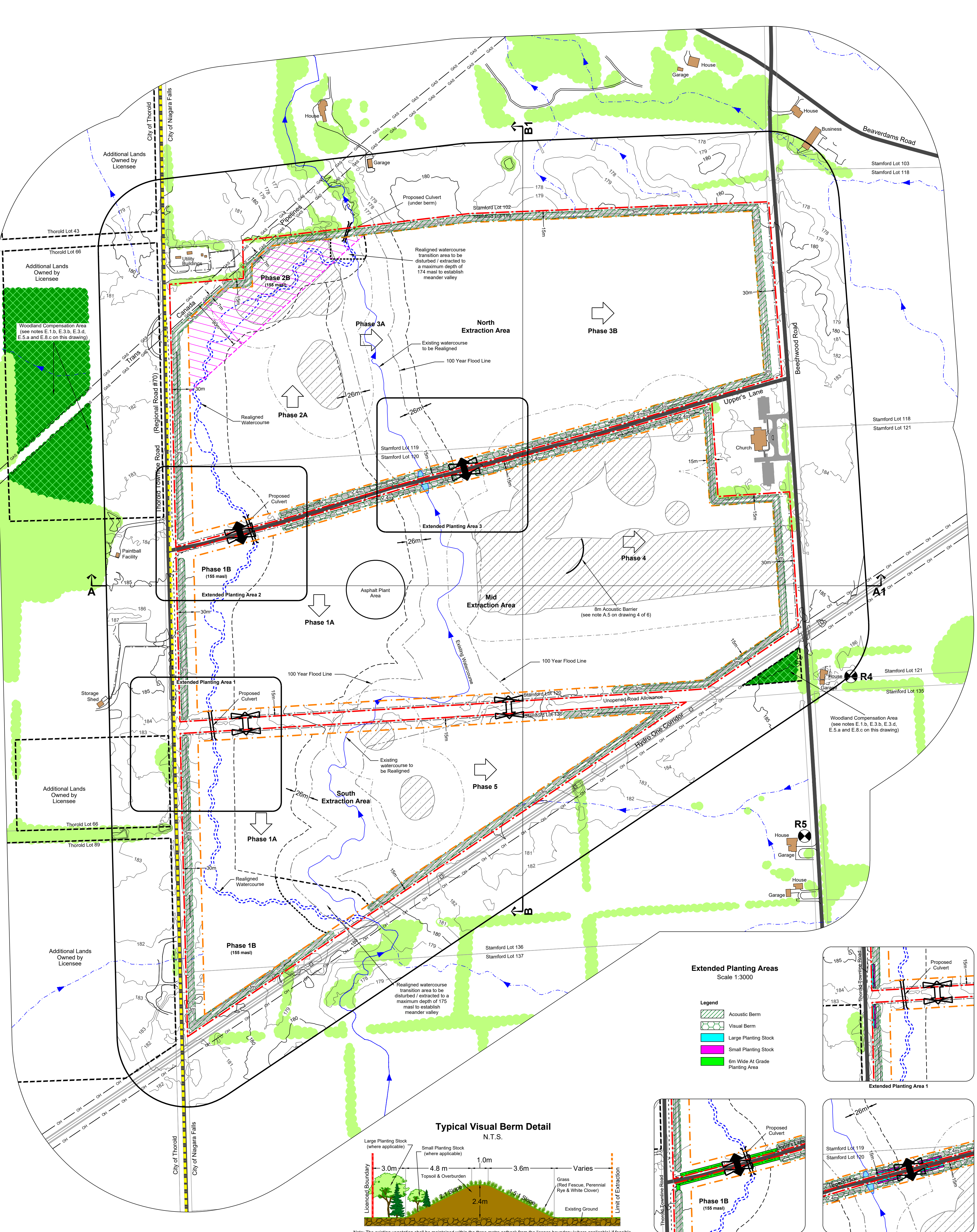
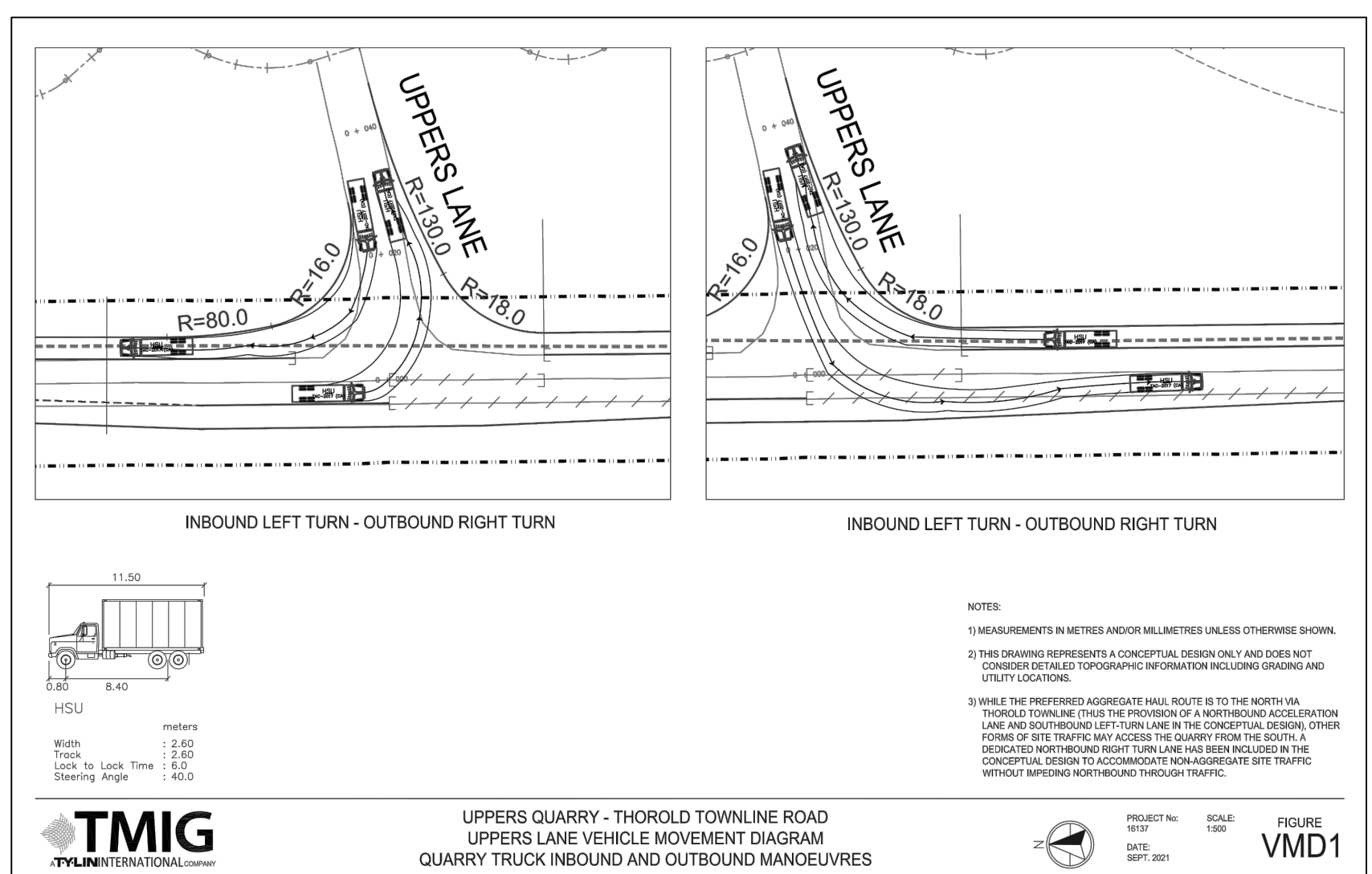
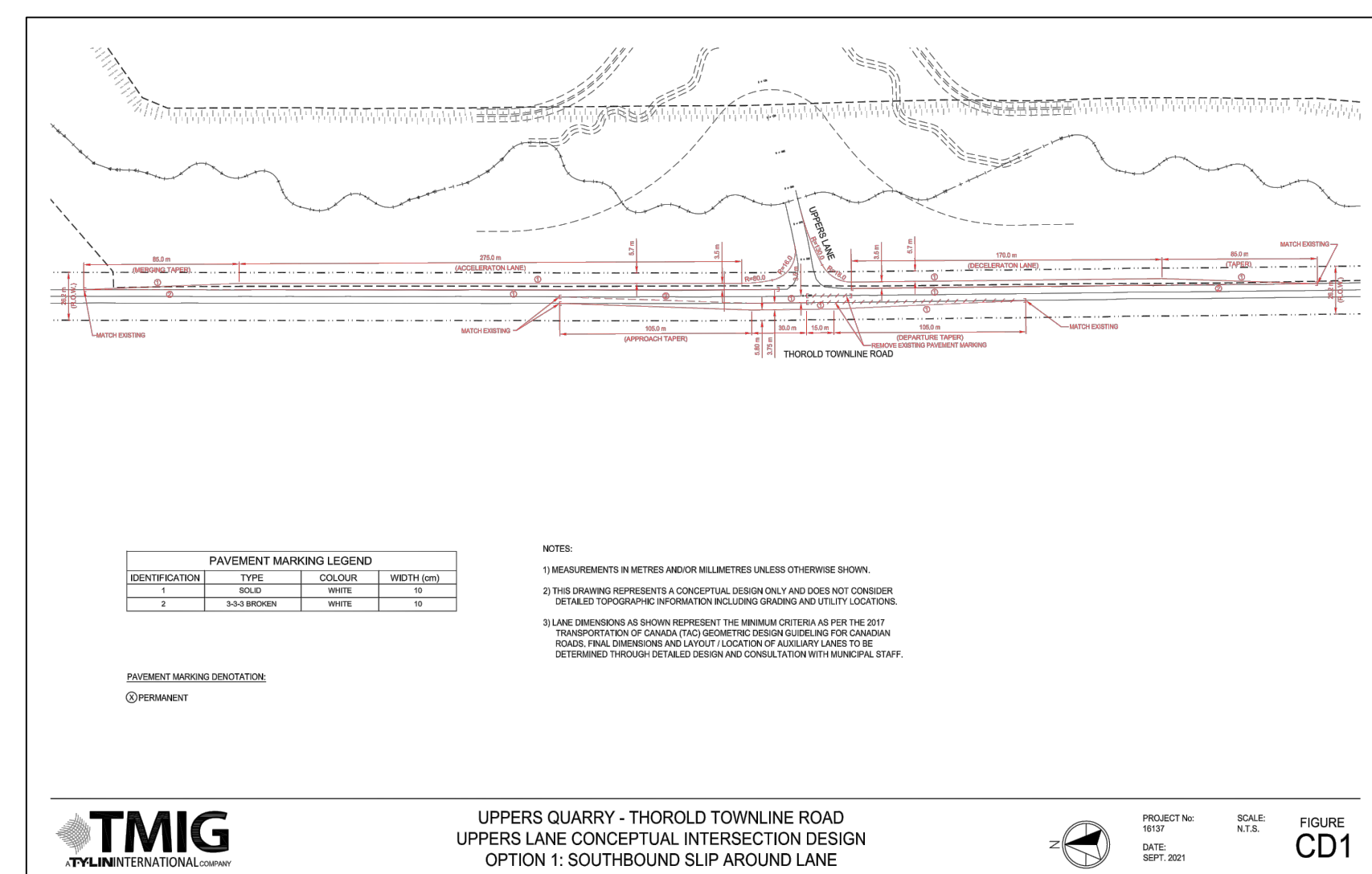
- White Pine, Common Hackberry, Chokecherry, White Spruce, Paper Birch, Pin Oak, Trembling Aspen, Basswood, White Pine, White Cedar.
Staghorn Sumac, Nannyberry, Common Nettlebark, American Elder, Dogwood, Highbush Cranberry.

**N. Spill Action Plan**

- 1. A spill action plan shall be carried out in accordance with the notes in Section N Spills Plan on drawing 2 of 3.

**O. Contingency Plan**

- 1. A trigger mechanism and contingency plan as set out in WSP's Level 2 Water Study Report shall be implemented.



Legal Description
Part of Lots 119, 120, 136 & 137
City of Niagara Falls (Geographic Township of Stamford)
Regional Municipality of Niagara

Legend
Licence Boundary
Limit of Extraction
Additional Lands Owned by Licensee
Municipal Boundary
Contours with Elevation
Public Road
Fence
Watercourse
Surface Drainage Feature
Watercourse - Re-aligned
Water Feature
Wooded Area
Woodland Compensation Area (Off-site)
Archaeological Site
Archaeological Offset

120m Offset From Licence Boundary
Trans Canada Blasting Buffer Area
Parcel Fabric
Trans Canada Pipeline Easement
Hydro One Easement
Entrance / Exit
Limited Service Access
Gate
Culvert
General Direction of Excavation & Boundary
Berm
Noise Receptor
Cross Sections

Site Plan Acronyms
1. ARA - Aggregate Resources Act
2. MNDMNRP - Ministry of Northern Development, Mines, Natural Resources and Forestry
3. MHSTCI - Ministry of Heritage, Sport, Tourism and Culture Industries
4. MECP - Ministry of the Environment, Conservation and Parks
5. MGCS - Ministry of Government and Consumer Services
6. DFO - Department of Fisheries and Oceans Canada
7. ECA - Environmental Compliance Approval
8. BMPP - Best Management Practices Plan
9. PTTW - Permit to Take Water
10. MASL - Metres above sea level
11. ROW - Right of way
12. HMA - Hot mix asphalt

Site Plan Amendments
Table with columns: No., Date, Description, By.

Site Plan Revisions (Pre-Licensing)
Table with columns: No., Date, Description, By.

MHBC logo and contact information: PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE. 113 COLLEGE STREET, BARRE, ON, L4M 1H2. P: 705.728.9405 F: 705.728.2010. WWW.MHBCAN.COM

MHBC Stamp
Debra Walker, authorized by the Ministry of Northern Development, Mines, Natural Resources and Forestry pursuant to Section 2 (1) of the Aggregate Resources Act to prepare and certify site plans.
Christopher Poole, authorized by the Ministry of Northern Development, Mines, Natural Resources and Forestry pursuant to Section 2 (1) of the Aggregate Resources Act to prepare and certify site plans.

walker aggregates logo and address: Walker Aggregates Inc., 2800 Thorold Townline Road, P.O. Box 100, Thorold, Ontario L2V 3Y8.

Project: Upper's Quarry
MNDMNRP Licence Reference No.
Applicant's Signature: Christopher Poole, Date: October 2021
Plan Scale: 1:3000 (Arch E)
Drawn By: C.P., File No.: 9811V
Checked By: D.W.
Report Recommendations: 4 of 6
File Path: N:\9811V - Walker Upper's Quarry\Drawings\Site Plans\CAD\9811V - Site Plan - Proposed Scenario.dwg



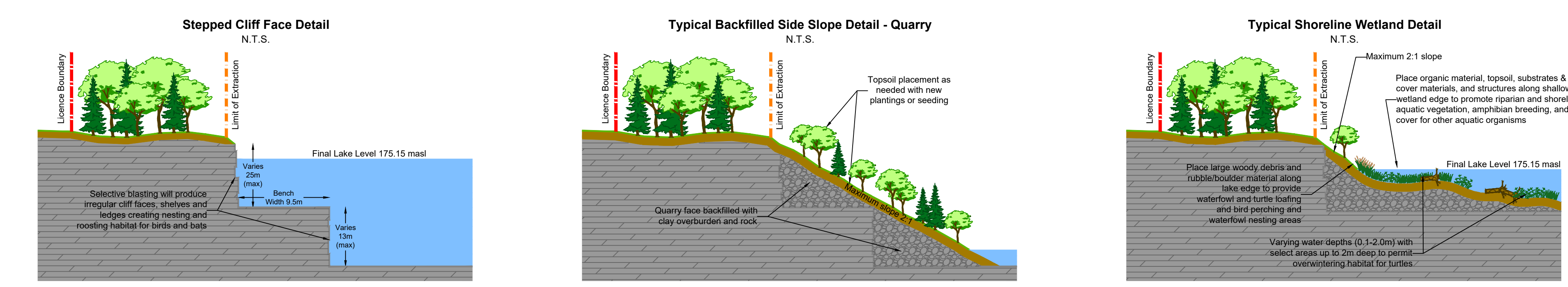


Table 1: Deciduous Woodland Planting List

%	Botanical Name	Common Name
<b>TREES</b>		
5	Acer saccharum	Sugar Maple
25	Quercus macrocarpa	Scarlet Oak
15	Fagus grandifolia	American Beech
15	Thuja occidentalis	Green Cedar
20	Prunus serotina	Black Cherry
5	Quercus rubra	Red Oak
15	Frax americana	Boxelder
<b>SHRUBS</b>		
15	Amelanchier arborea	Waxberry
20	Cornus canadensis	Blueberry
15	Hamamelis virginiana	Witch Hazel
15	Prunus virginiana	Chokeberry
20	Ribes cynosbati	European Raspberry
20	Cornus amomum	Gray Dogwood
15	Rubus odoratus	Purple Flowering Raspberry
<b>GROUND COVER</b>		
20	Stachytarax canadensis	Late Helleborus
15	Elymus hystrix	Bottlebrush Grass
15	Rudbeckia hirta	Black Eyed Susan
15	Carex granensis	Wetland Sedge
8	Salix caprea	Canada Goldenrod
8	Oenothera biennis	Evening Primrose
8	Asclepias syriaca	Common Milkweed
8	Cornus rugosa	Waxberry
5	Morone canadensis	Jack Spruce
1	Aster multiflorus	Star Loosestrife
1	Symphoricarpos racemosa	New England Aster
1	Aster novae-angliae	New England Aster

Table 2: Treed Deciduous Swamp Planting List

%	Botanical Name	Common Name
<b>TREES</b>		
20	Acer fraxinifolius	Freeman's Maple
20	Liquidambar styraciflua	Black Walnut
20	Populus deltoides	Eastern Cottonwood
20	Quercus macrocarpa	Scarlet Oak
20	Thuja occidentalis	Eastern White Cedar
<b>SHRUBS</b>		
14	Cornus amomum	Silky Dogwood
12	Cornus rugosa	Gray Dogwood
12	Ilex verticillata	Winterberry
12	Rosa palustris	Swamp Rose
12	Salix helvetica	Bald's Willow
14	Cornus alba	Meadowsweet
12	Viburnum lentago	Nannyberry
12	Viburnum trilobum	American Cranberry-bush
<b>LIKE STAKES</b>		
24	Cornus amomum	Silky Dogwood
33	Salix alba	Pussy Willow
33	Salix viminalis	Heartleaf Willow

Table 3: Swamp Thicket / Marsh Meadow Planting List

%	Botanical Name	Common Name
<b>SHRUBS</b>		
14	Cornus amomum	Silky Dogwood
12	Cornus rugosa	Gray Dogwood
12	Ilex verticillata	Winterberry
12	Rosa palustris	Swamp Rose
12	Salix helvetica	Bald's Willow
14	Cornus alba	Meadowsweet
12	Viburnum lentago	Nannyberry
12	Viburnum trilobum	American Cranberry-bush
<b>LIKE STAKES</b>		
24	Cornus amomum	Silky Dogwood
33	Salix alba	Pussy Willow
33	Salix viminalis	Heartleaf Willow

Table 4: Riparian Planting List

%	Botanical Name	Common Name
<b>PLANTS</b>		
10	Alnus incana	White Alder
15	Salix nigricans	Black Willow
10	Carex lasiocarpa	Wetland Sedge
10	Eleocharis acicularis	Sparganium
10	Eleocharis acicularis	Sparganium
5	Eleocharis acicularis	Sparganium
5	Eleocharis acicularis	Sparganium
2	Eleocharis acicularis	Sparganium
2	Eleocharis acicularis	Sparganium
2	Eleocharis acicularis	Sparganium
2	Eleocharis acicularis	Sparganium
2	Eleocharis acicularis	Sparganium
2	Eleocharis acicularis	Sparganium
1	Eleocharis acicularis	Sparganium
1	Eleocharis acicularis	Sparganium
1	Eleocharis acicularis	Sparganium
1	Eleocharis acicularis	Sparganium

Table 5: Riparian Planting List

%	Botanical Name	Common Name
<b>SHRUBS</b>		
14	Cornus amomum	Silky Dogwood
12	Cornus rugosa	Gray Dogwood
12	Ilex verticillata	Winterberry
12	Rosa palustris	Swamp Rose
12	Salix helvetica	Bald's Willow
14	Cornus alba	Meadowsweet
12	Viburnum lentago	Nannyberry
12	Viburnum trilobum	American Cranberry-bush
<b>LIKE STAKES (Along Creek)</b>		
34	Cornus amomum	Silky Dogwood
33	Salix alba	Pussy Willow
33	Salix viminalis	Heartleaf Willow
<b>RIPARIAN SEED MIX</b>		
20	Phlox pilularis	Flowering Phlox
20	Carex granensis	Wetland Sedge
10	Asclepias syriaca	Common Milkweed
10	Verbena hastata	Blue Verben
10	Andropogon gerardii	Big Bluestem
10	Junco tenax	Field Sparrow
5	Rudbeckia hirta	Black Eyed Susan
4	Salix caprea	Canada Goldenrod
4	Cornus rugosa	Wetland Sedge
4	Morone canadensis	Jack Spruce
1	Anemone canadensis	Canada Anemone
1	Symphoricarpos racemosa	New England Aster
1	Symphoricarpos racemosa	New England Aster

PROGRESSIVE REHABILITATION

A. General

- Area calculations:
  - Licensed area: 103.6 ha
  - To be extracted: 89.1 ha
  - Final rehabilitation within licence (total): 103.6 ha
    - Lake: 68.8 ha
    - Shoreline wetland: 1.3 ha
    - Wetland/pond/stream: 2.9 ha
    - Terrestrial: 22.7 ha
    - Deciduous Woodland: 1.2 ha
    - Treed Deciduous Swamp: 2.0 ha
    - Swamp Thicket & Marsh Meadow: 0.8 ha
    - Undisturbed: 3.9 ha
    - Woodland outside of licence: 4.7 ha
    - Woodland Compensation Area: 4.7 ha
- The maximum predicted water table is 184.9 masl and the contact aquifer potentiometric contours range between 176.0 and 184.9 masl (see per WSP's "Proposed Upper's Quarry - Maximum Predicted Water Table Report", dated October 2021).

B. Phasing

- As excavation reaches the limit of extraction or maximum depth, progressive rehabilitation shall commence.
- Progressive rehabilitation shall follow the general direction and sequence of extraction identified on the plan view and described in the notes on drawing 3 of 6. Minor deviations in operational/rehabilitation sequence will be permitted in order to adjust for any variable resource and market conditions.
- Prior to extraction commencing in Phases 3A and 3B, side sloping adjacent to Phases 1B and 2B shall be completed to allow for the existing watercourse realignment to be finalized.
- Dewatering of the quarry will ultimately discharge to the watercourse (pre and post realignment). The quarry will continue dewatering operations to maintain a dry quarry floor. When the rock is fully extracted, it is proposed that dewatering operations will cease and the quarry will be permitted to fill naturally with surplus precipitation, surface water and any contribution from groundwater seepage to form a lake. As shown on the plan view, shallow shoreline wetland areas shall be created to provide aquatic habitat.
- Watercourse Realignment Channel Area - As portions of the watercourse realignment channel are constructed, the channel shall be planted according to the requirements of each respective planting zone: (i) riparian planting zone; (ii) upland planting zone; (iii) shoreline planting zone and (iv) life staking planting zone. Details relating to construction, planting and monitoring requirements for the watercourse realignment corridor are contained within the "Natural Channel Design Report" prepared by Stattek Consulting Ltd. (dated October 2021).
- Reforestation Areas - There are two main reforestation areas:
  - The Woodland Compensation Area (Off-site) to be no less than 4.3 ha in area. Plantings in this area are set out in Table 1 on this drawing. Planting for this Area (Off-site) will commence in the appropriate planting season following licence approval.
  - The on-site Woodland Compensation Area includes the areas identified as the Deciduous Woodland, Treed Deciduous Swamp and Swamp Thicket/Marsh Meadow, to be no less than 4.0 ha in total area. Plantings in these areas are set out in Tables 1 to 3 on this drawing respectively. In the Deciduous Woodlands (on-site), additional conifer species will be added to the species mix to provide additional screening.
- A woodland and wildlife habitat compensation plan shall be prepared in consultation with regulatory authorities in accordance with Note E.5.a on drawing 4 of 6.

C. Slopes and Grading

- Progressive rehabilitation will utilize a variety of rehabilitation techniques including:
  - backfilling extraction faces and quarry floors; or
  - Leaving extraction faces vertical
- Excess soil, as defined by Ontario Regulation 406/19 under the Environmental Protection Act, may be imported for the following rehabilitation purposes:
  - To establish the final elevations, slopes and grades depicted on the plan view
- Excess soil imported for the rehabilitation purposes described above shall meet the soil quality, tracking and testing standards required by Ontario Regulation 406/19 or the applicable MECP standards at the time.
- The final rehabilitated landforms established using the rehabilitation techniques will consist of a lake, shoreline wetlands, riparian corridor, woodlands, gradually sloping grades, 2:1 and 3:1 side slopes, and vertical faces as shown on the plan view.

D. Seeding and Planting

- Side slopes steeper than 3:1 shall 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.
- The deciduous woodlands, treed deciduous swamp, swamp thicket/marsh meadow, shoreline wetland, and realigned watercourse channel (riparian corridor) shall be planted with species identified in Tables 1-5 on this drawing respectively.

E. Drainage

- Final surface drainage will follow the rehabilitated contours and directional arrows shown on the plan view.
- Once the quarry is depleted, pumping will cease and portions of the site below the ground water table will fill with water.
- The quarry dewatering discharge will be directed to the watercourse (pre and post alignment) and ultimately flow to Beavertons Creek to support fish habitat and downstream wetlands.
- The licensee shall operate in accordance with the conditions of the MECP, PTTW and ECA for the ongoing dewatering of the site.

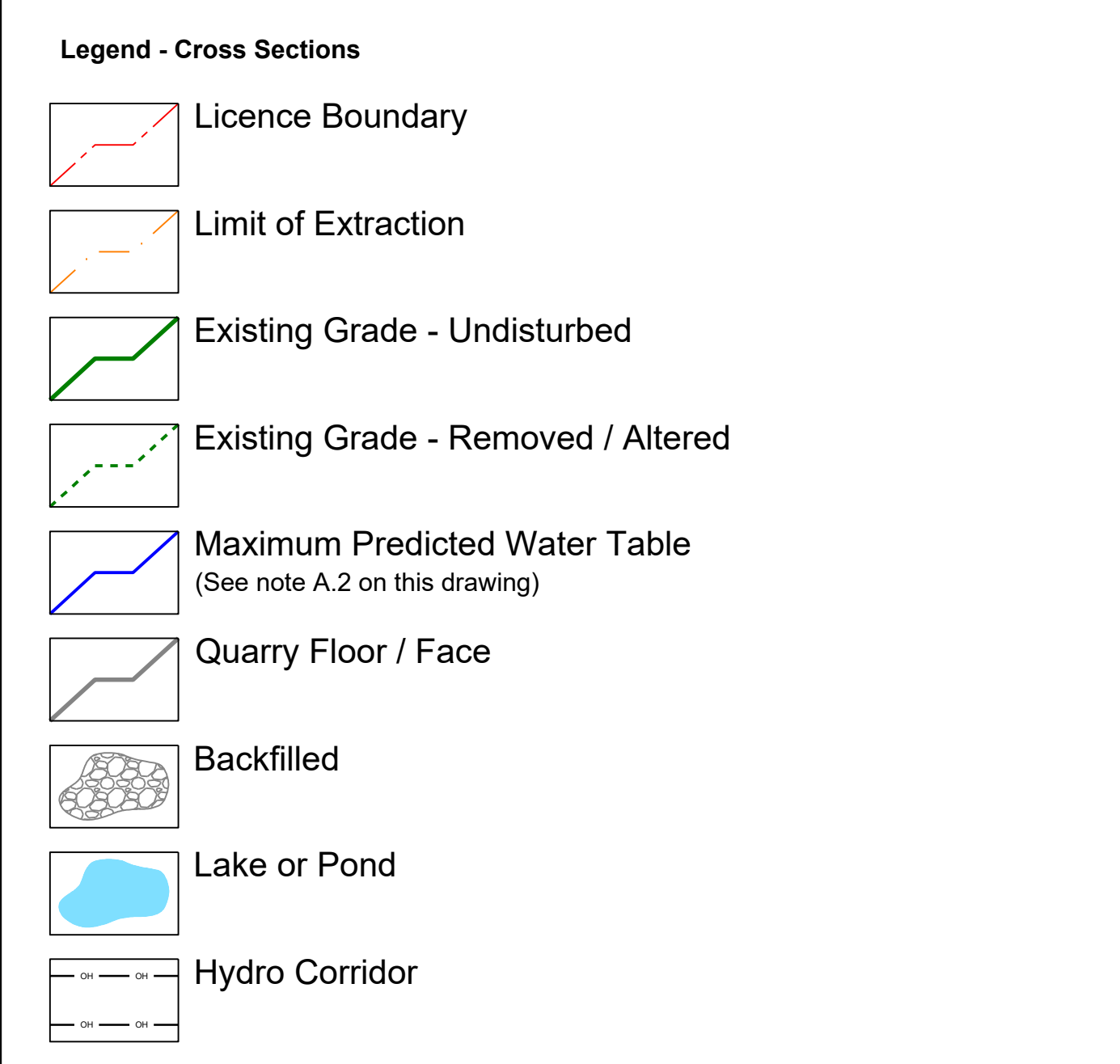
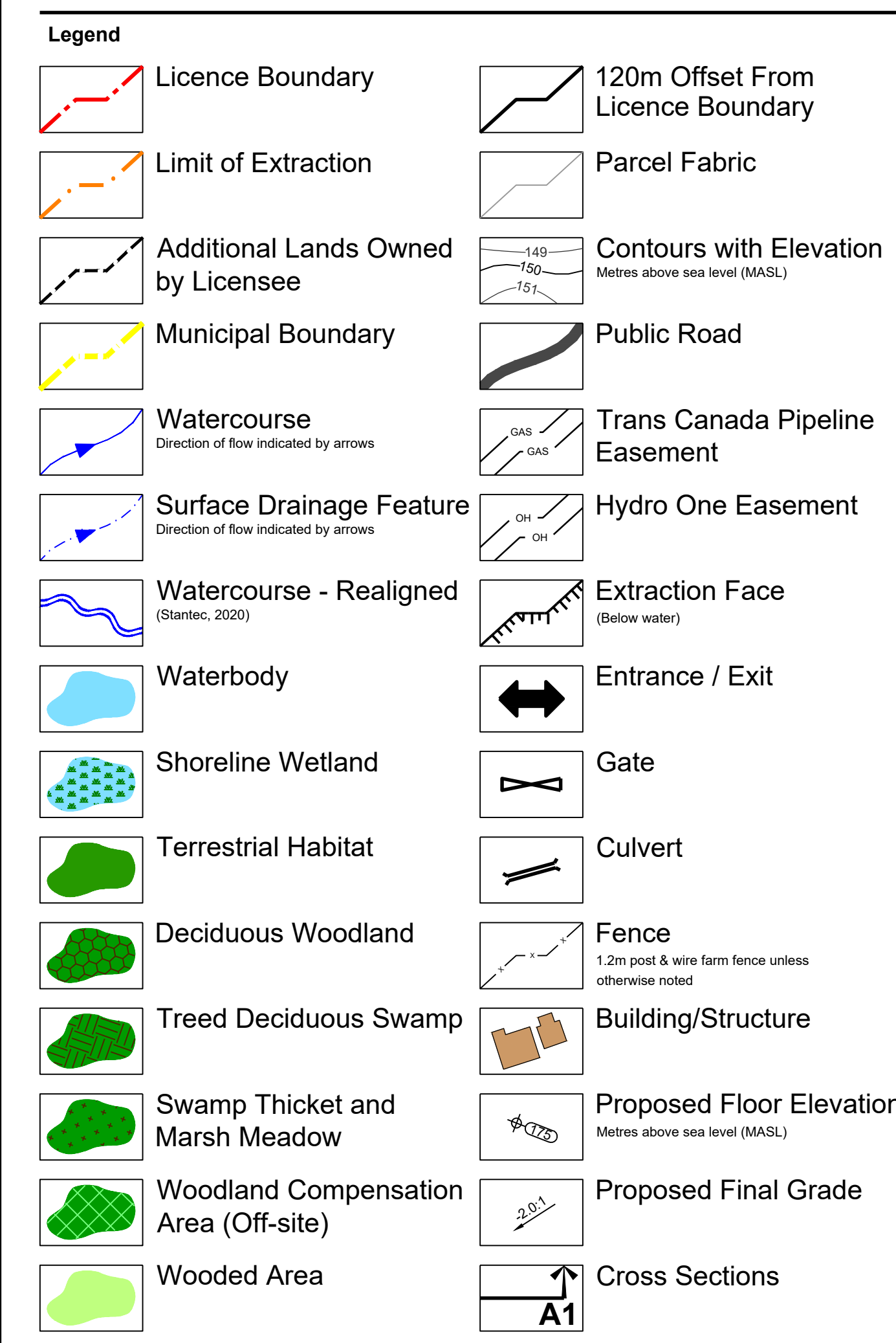
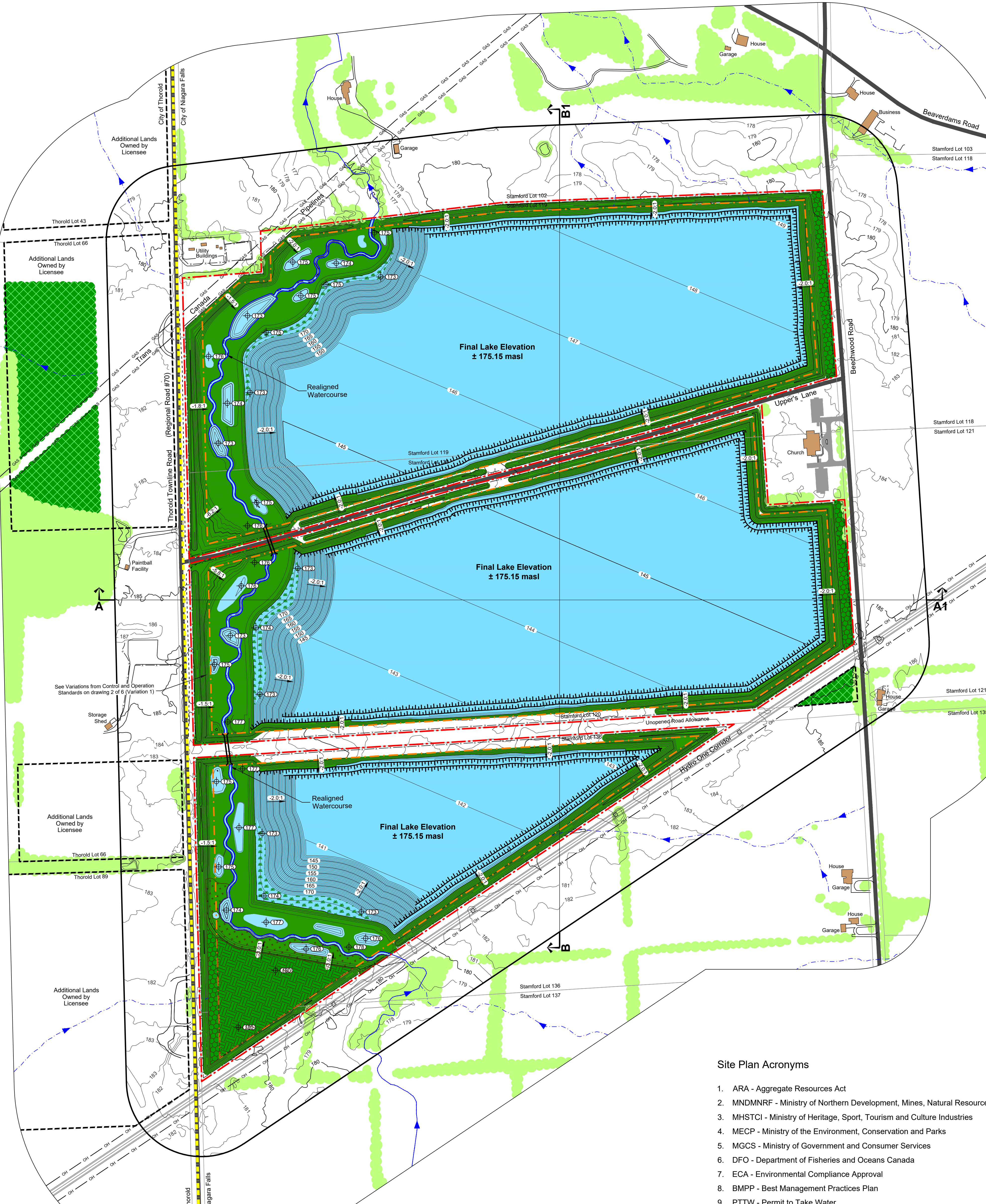
F. Trigger Mechanism and Contingency Plan

- During progressive rehabilitation, until surrendering the licence, the licensee is required to operate in accordance with the Trigger Mechanism and Contingency Plan, included in the Upper's Quarry Level 2 Water Study Report prepared by WSP, dated October 2021, as may be amended from time to time with approval from MNDMNR.

FINAL REHABILITATION

A. General

- All equipment shall be removed from the licensed area.
- A field/property access entrance shall remain to access the watercourse (as realigned).
- The long term average surface water and lake level elevation is estimated to be approximately 175.15 masl.
- At final rehabilitation, outflow from the realigned watercourse and the quarry lake will continue to discharge from the licence area at the present location where the existing watercourse channel crosses the northern licence boundary.



Site Plan Amendments

No.	Date	Description	By

Site Plan Revisions (Pre-Licensing)

No.	Date	Description	By

MHBC Stamp  
 Debra Walker  
 Is authorized by the Ministry of Northern Development, Mines, Natural Resources and Forestry pursuant to Section 2 (1) of the Aggregate Resources Act to prepare and certify site plans.

MHBC Stamp  
 Christopher Poole  
 Is authorized by the Ministry of Northern Development, Mines, Natural Resources and Forestry pursuant to Section 2 (1) of the Aggregate Resources Act to prepare and certify site plans.

Applicant  
 Walker Aggregates Inc.  
 2800 Thorold Townline Road  
 P.O. Box 100  
 Thorold, Ontario  
 L2V 3Y8

Site Plan Acronyms

- ARA - Aggregate Resources Act
- MNDMNR - Ministry of Northern Development, Mines, Natural Resources and Forestry
- MHSTCI - Ministry of Heritage, Sport, Tourism and Culture Industries
- MECP - Ministry of the Environment, Conservation and Parks
- MGCS - Ministry of Government and Consumer Services
- DFO - Department of Fisheries and Oceans Canada
- ECA - Environmental Compliance Approval
- BMPP - Best Management Practices Plan
- PTTW - Permit to Take Water
- MASL - Metres above sea level
- ROW - Right of way
- HMA - Hot mix asphalt

Project  
**Upper's Quarry**

MNDMNR Licence Reference No.	Applicant's Signature

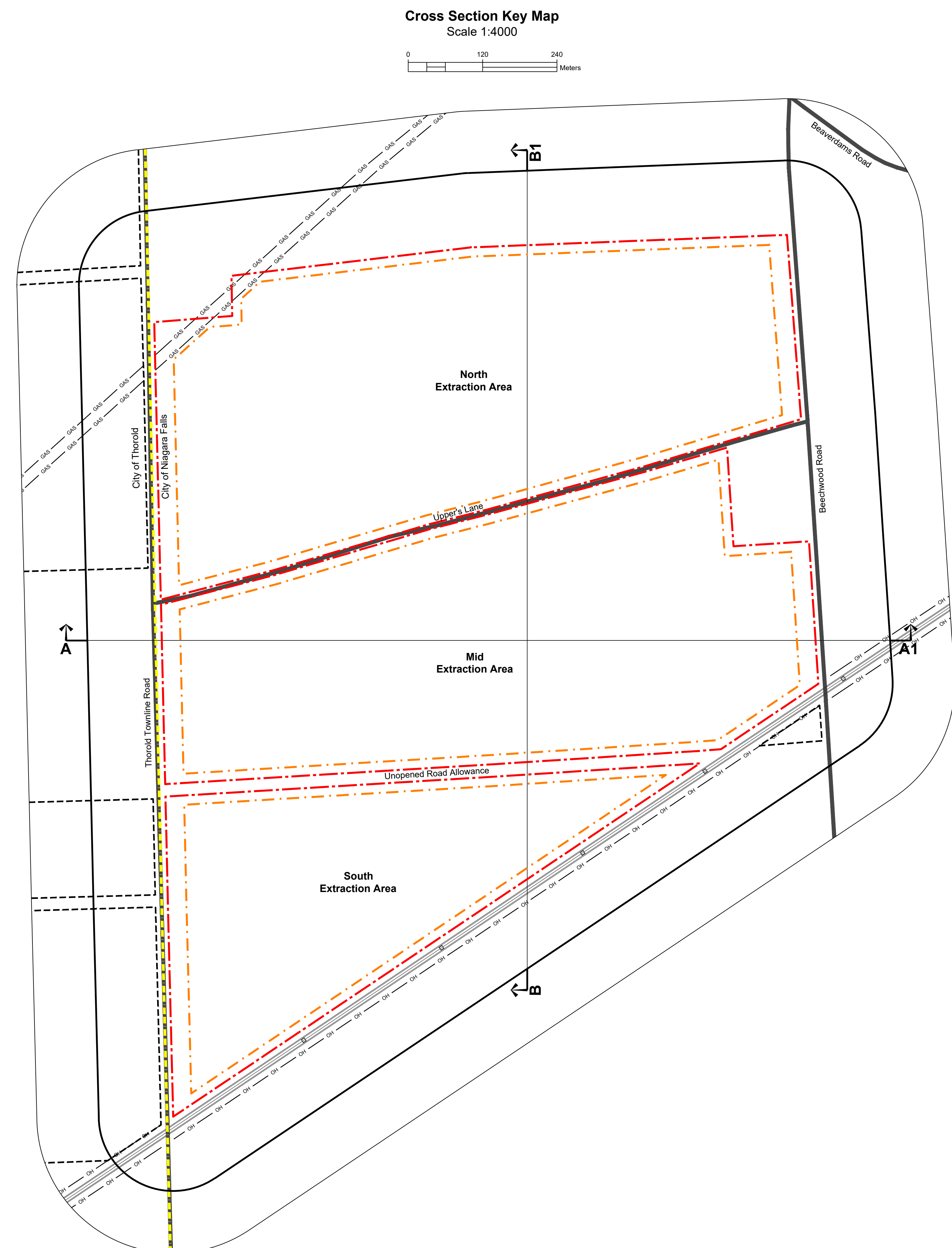
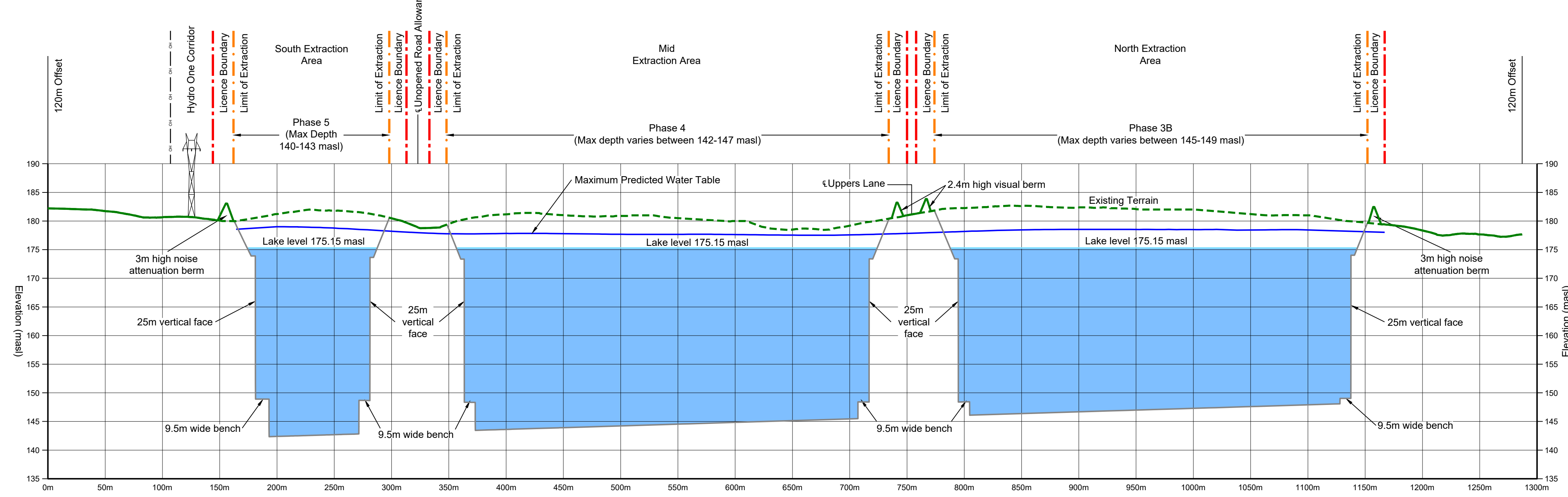
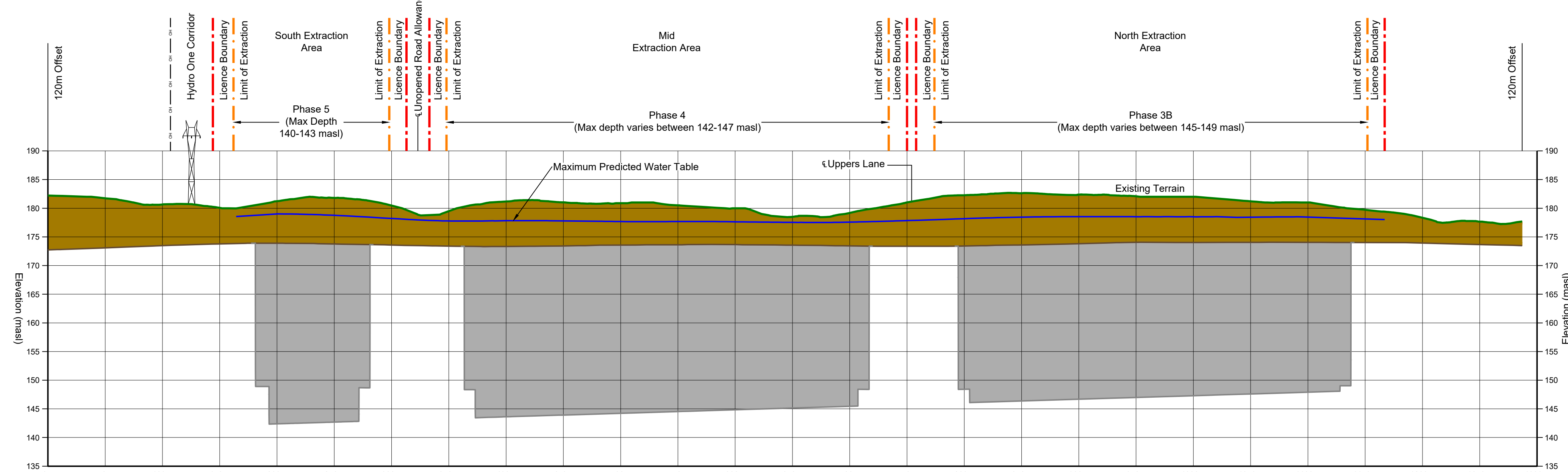
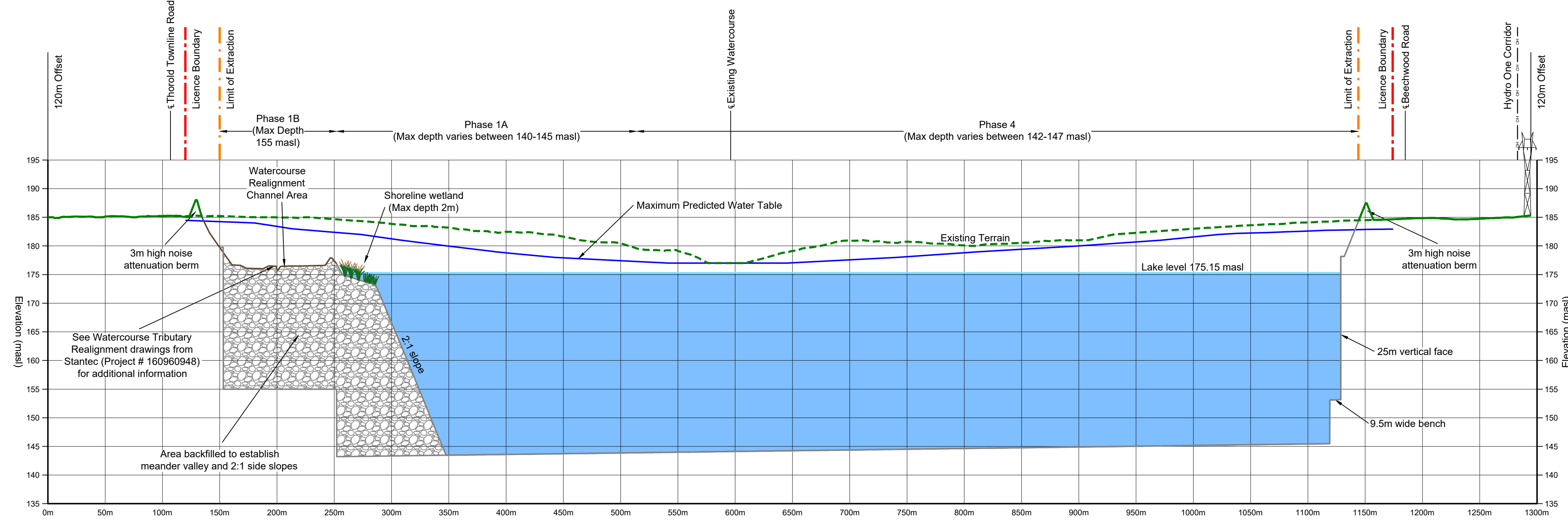
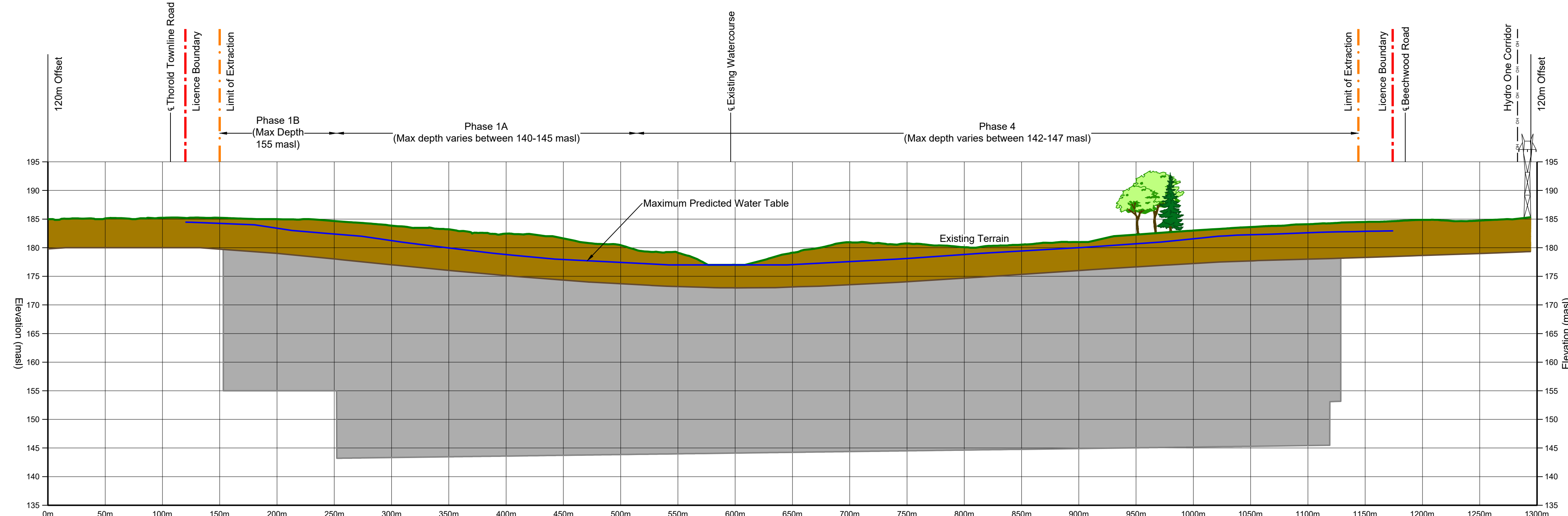
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	Checked By: D.W.

File Name  
**Rehabilitation Plan**

Drawing No.  
**5 of 6**

File Path  
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- Legal Description**  
Part of Lots 119, 120, 136 & 137  
City of Niagara Falls (Geographic Township of Stamford)  
Regional Municipality of Niagara
- Legend**
- Licence Boundary
  - Limit of Extraction
  - Additional Lands Owned by Licensee
  - Municipal Boundary
  - 120m Offset From Licence Boundary
  - Public Road
  - Trans Canada Pipeline Easement
  - Hydro One Easement
  - Cross Sections

- Legend - Cross Sections**
- Licence Boundary
  - Limit of Extraction
  - Existing Grade - Undisturbed
  - Existing Grade - Removed / Altered
  - Berm
  - Maximum Predicted Water Table (See note A.2 on drawing 5 of 6)
  - Quarry Floor / Face
  - Topsoil and/or Overburden
  - Aggregate Available for Extraction
  - Backfilled
  - Lake or Pond
  - Hydro Corridor

**Site Plan Amendments**

No.	Date	Description	By

**Site Plan Revisions (Pre-Licensing)**

No.	Date	Description	By

**MHBC**  
PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE  
113 COLLIER STREET, BARRE, ON, L4M 1H2 | P: 705.728.0445 F: 705.728.2010 | WWW.MHBCPLAN.COM

**MHBC Stamp**

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**Applicant**

**walker aggregates**  
Walker Aggregates Inc.  
2800 Thorold Townline Road  
P.O. Box 100  
Thorold, Ontario  
L2V 3Y8

**Project**  
**Upper's Quarry**

**MNDMRF Licence Reference No.**      **Applicant's Signature**

**Plan Scale:** (Arch E)      **Date:** October 2021

**Horizontal:** 1:2500      **Drawn By:** C.P.      **File No.:** 9811V

**Vertical:** 1:500      **Checked By:** D.W.

**File Name:** **Cross Sections**

**Drawing No.:** **6 of 6**

**File Path:** N:\88111V - Walker Upper's Quarry\Drawings\Site Plan\CAD\811V - Site Plan - Proposed Scenario.dwg