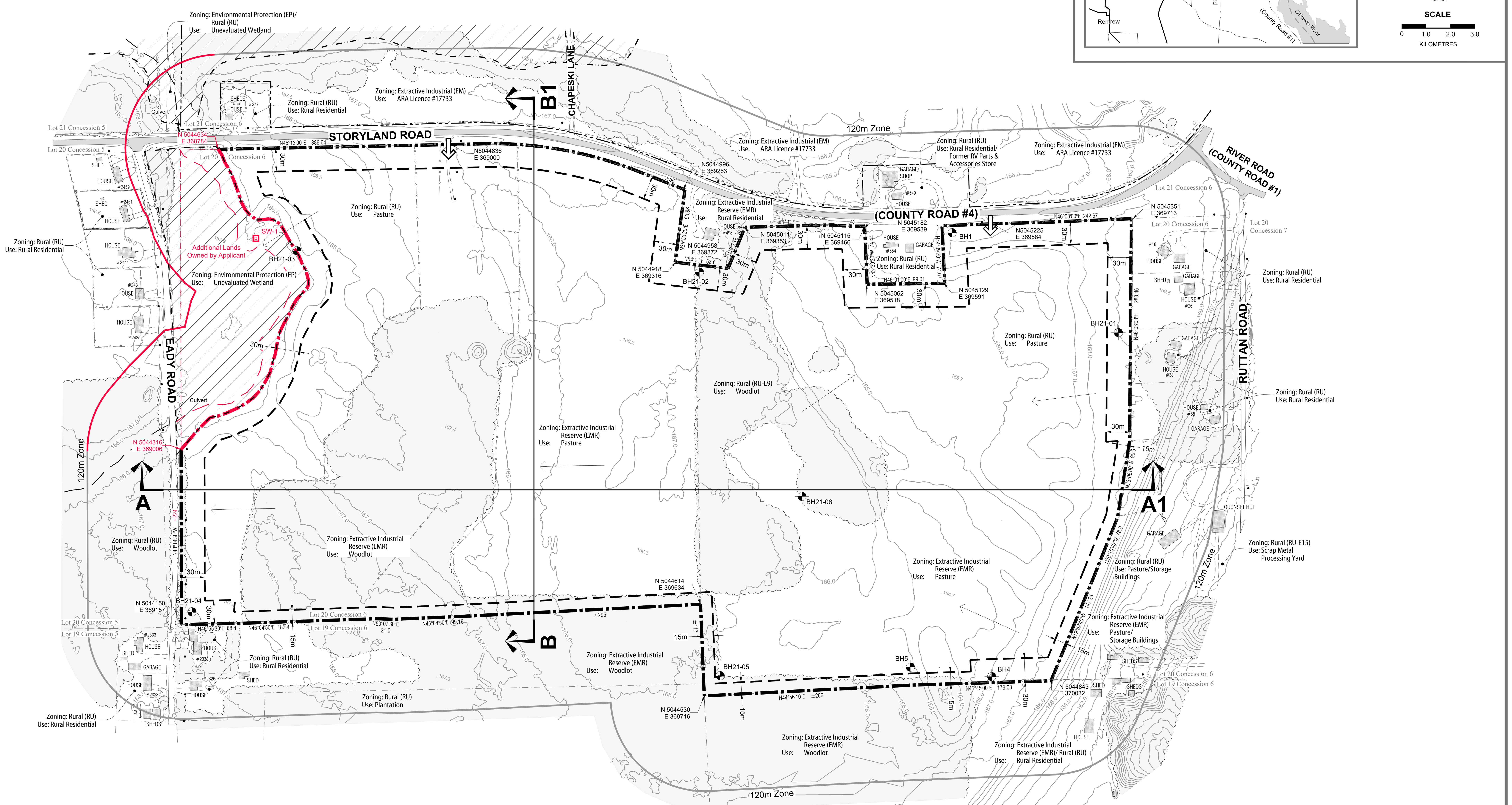
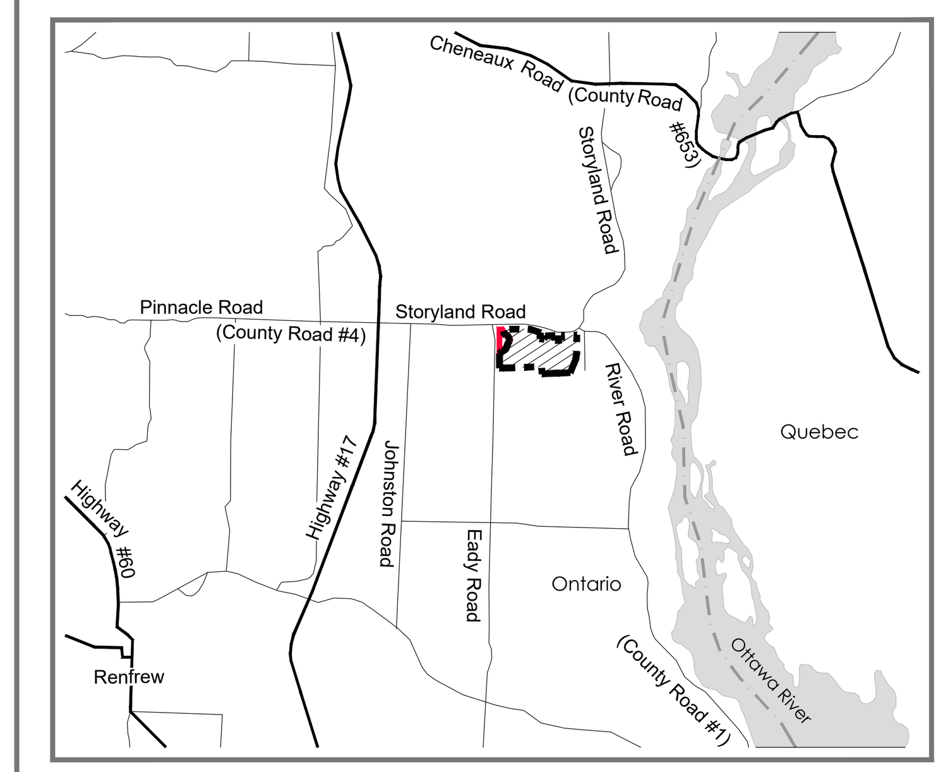


Key Plan



Subject Lands

Additional Lands Owned by Applicant

SCALE

0 1.0 2.0 3.0

KILOMETRES

Legal Description

PART OF LOT 20 CONCESSION 6
(geographic township of Horton)
TOWNSHIP OF HORTON
COUNTY OF RENFREW

Legend

- Boundary of Area to be Licensed
- Limit of Excavation — ALL SETBACKS ARE DRAWN TO SCALE AND SHOW LABELLED DISTANCES
- Existing Fence — PAGE WIRE FENCE UNLESS OTHERWISE NOTED
- Existing Licensed Boundary — ARA LICENCE #17733
- Public Road (Paved) / Public Road (Gravel)
- Existing Spot Elevation — METRES ABOVE SEA LEVEL
- Private Laneway
- Contour with Elevation — METRES ABOVE SEA LEVEL
- Farm/Field Access
- Building/Structure — LOCATION AND USE FOR BUILDINGS ON-SITE AND WITHIN 120m ARE SHOWN ON THIS PAGE.
- Existing Vegetation
- Direction of Surface Drainage (IF ANY)
- Hydro Pole
- Drainage Feature
- Unevaluated Wetland — ONTARIO GEOHUB OPEN DATA
- ~~Category 3 Butternut Trees~~ — ~~FROM McKINLEY ENVIRONMENTAL (2022)~~
- Monitoring Well Locations — GOLDER 2021
- Surface Water Monitor — WSP 2021
- Parcel Fabric
- Cross Sections — SEE PAGE 5 OF 5 FOR EXISTING AND REHABILITATED CROSS SECTIONS

Site Plan Amendments

No.	Date	Description	By

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE

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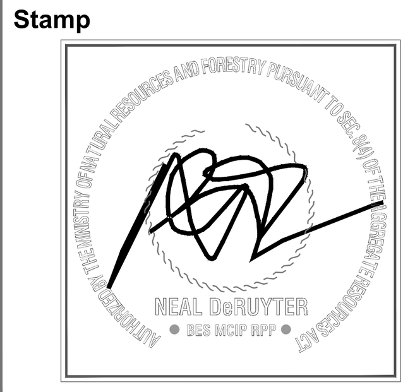
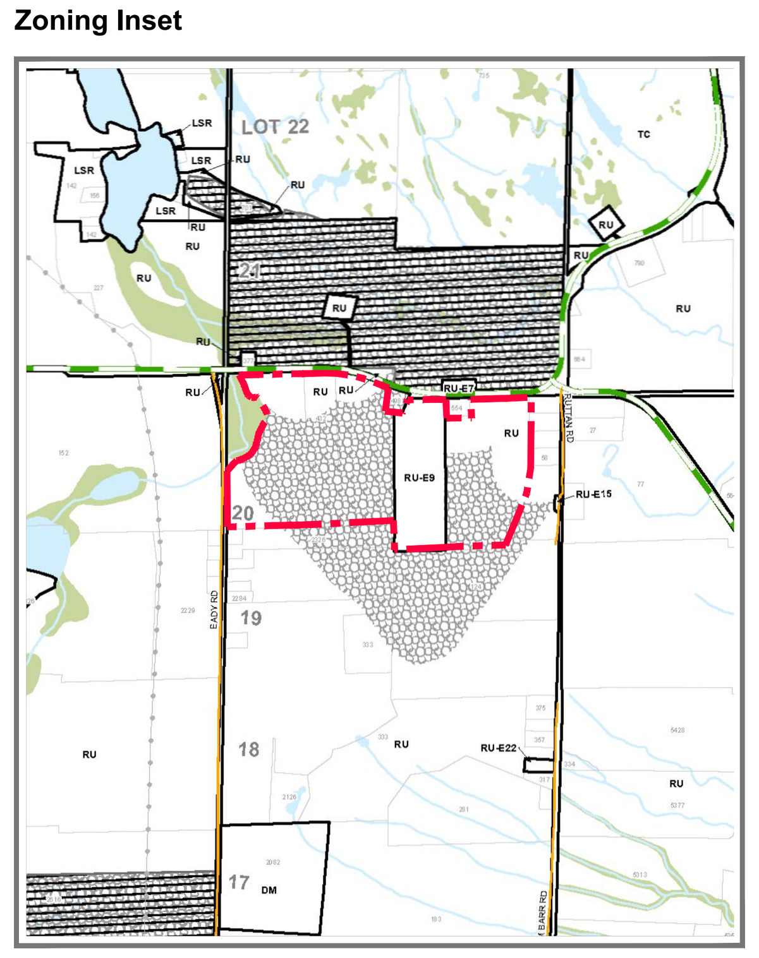
MNRF Approval Stamp

Stamp



Zoning Inset



Subject Lands

- Environmental Protection
- Extractive Industrial Reserve (EMR)
- Extractive Industrial (EM)
- LSR Limited Service Residential
- TC Tourism Commercial
- DM Disposal Industrial
- RU Rural

Source: Township of Horton Zoning By-law 2010-14

SCALE: NTS

Notes:

A. General

1. This site plan is prepared under the Aggregate Resources Act (ARA) for a Class A licence for a pit below the ground water table and follows the Aggregate Resources of Ontario: Site Plan Standards August 2020.
2. Area Calculations:
   Licence Area: 65.6 hectares (162 acres)
   Limit of Extraction: 55.9 hectares (138 acres)
3. All measurements shown are in metres unless specified otherwise.

B. References

1. Topographic information compiled by GeoOptic (a division of Aeon Egmond Ltd.) produced from aerial photography flown March 23, 2021. Mapping is produced in real world scale and coordinates (NAD83 UTM Zone 18N). Contour interval is 1m. All elevations are geodetic (CGVD2013 HT2).
2. Property boundary from parcel fabric on vuMap (First Base Solutions) online mapping subscription; Plan 49R-6656 prepared by Gibson, Sury & Rowe (Oct.1983); Plan 49R-15517 prepared by Adam Kasprzak Surveying Ltd. (July 2004); Plan 49R-8151 prepared by Sury, Rowe & Kasprzak Limited (Nov. 1986) and Plan 49R-19545 prepared by Adam Kasprzak Surveying Ltd. (Apr. 2020).
3. The subject site is zoned Extractive Industrial Reserve (EMR) and Rural (RU) and Environmental Protection (EP) in the Township of Horton Zoning By-law 2010-14.
4. Land use information compiled from 2021 imagery and client input.

C. Drainage

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

D. Groundwater

1. The groundwater table elevation on site ranges between 165 masl in the western portion of the site to 160 masl in the eastern portion of the site. The existing water table elevations are shown on each cross section on page 5 of 5. Groundwater table elevations provided by WSP Golder (November 2022).

E. Site Access and Fencing

1. There are several existing field accesses to the site. in the locations shown on the plan view.
2. Post and wire fencing (unless noted otherwise) exists in the locations shown on the plan view.

F. Aggregate Related Site Features

1. There are no existing aggregate operations or features on-site such as processing areas with stationary or portable equipment, stockpiles, recyclable materials, scrap, haul roads, fuel storage, berms or excavation faces.

G. Significant Natural Features

1. On-site: significant woodland and species at risk (Butternut).
   Off-site within 120m: significant woodland, fish habitat, unevaluated wetland and significant wildlife habitat (Source: NER/EIS and Addendum #1, McKinley Environmental Solutions).

H. Cross Sections

1. As shown on this page. Detailed sections are shown on page 5 of 5.
2. Cross section locations are identified on the plan view for each drawing.

I. Report References

1. Noise: "Acoustic Assessment for the Proposed Storyland Pit Township of Horton, County of Renfrew, Ontario" November 2022 (Source: Freefield Ltd.)
2. Natural Environment: "Storyland Road Aggregate Development Natural Environment Report & Environmental Impact Statement" November 2022 (Source: McKinley Environmental Solutions); Addendum #1 September 2023.
3. Archaeology: "Stage 1 Archaeological Assessment: Storyland Road, Part Lot 20, Concession 6, Geographic Township of Horton, County of Renfrew, Ontario" March 2021 (Source: Paterson Group) and "Stage 2 Archaeological Assessment: 432 Storyland Road, Part Lot 20, Concession 6, PIN 57271-0024 Geographic Township of Horton, County of Renfrew, Ontario" June 2021 (Source: Matrix Heritage Inc.)
4. Hydrogeology: "Level 1 and Level 2 Water Report Proposed Storyland Pit, Horton Township Ontario" November 2022 (Source: WSP Golder)
5. Maximum Predicted Water Table Report: "Proposed Storyland Pit Horton Township, Ontario" November 2022 (Source: WSP Golder)
6. Traffic: "Proposed Mineral Extraction Site, 432 Storyland Road, County of Renfrew" November 3, 2022 (Source: Castleglenn Consultants Ltd.)

Applicant

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R. W. Tomlinson Limited
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Rob Pierce
R.W. Tomlinson Limited
Vice President Planning and Development

Project

Storyland Pit

ARA Licence Reference No.

Pre-approval review:

Responses to Technical Review - Sept. 2023

For Submittal to MNRF - November 2022

Plan Scale 1:3,000 (Arch D)

SCALE

50 0 50 100

METRES

Plot Scale 1:3 [1mm = 3 units] MODEL

Drawn By D.G.S.

File No. 9137W

Checked By N.D.

File Name

EXISTING FEATURES PLAN

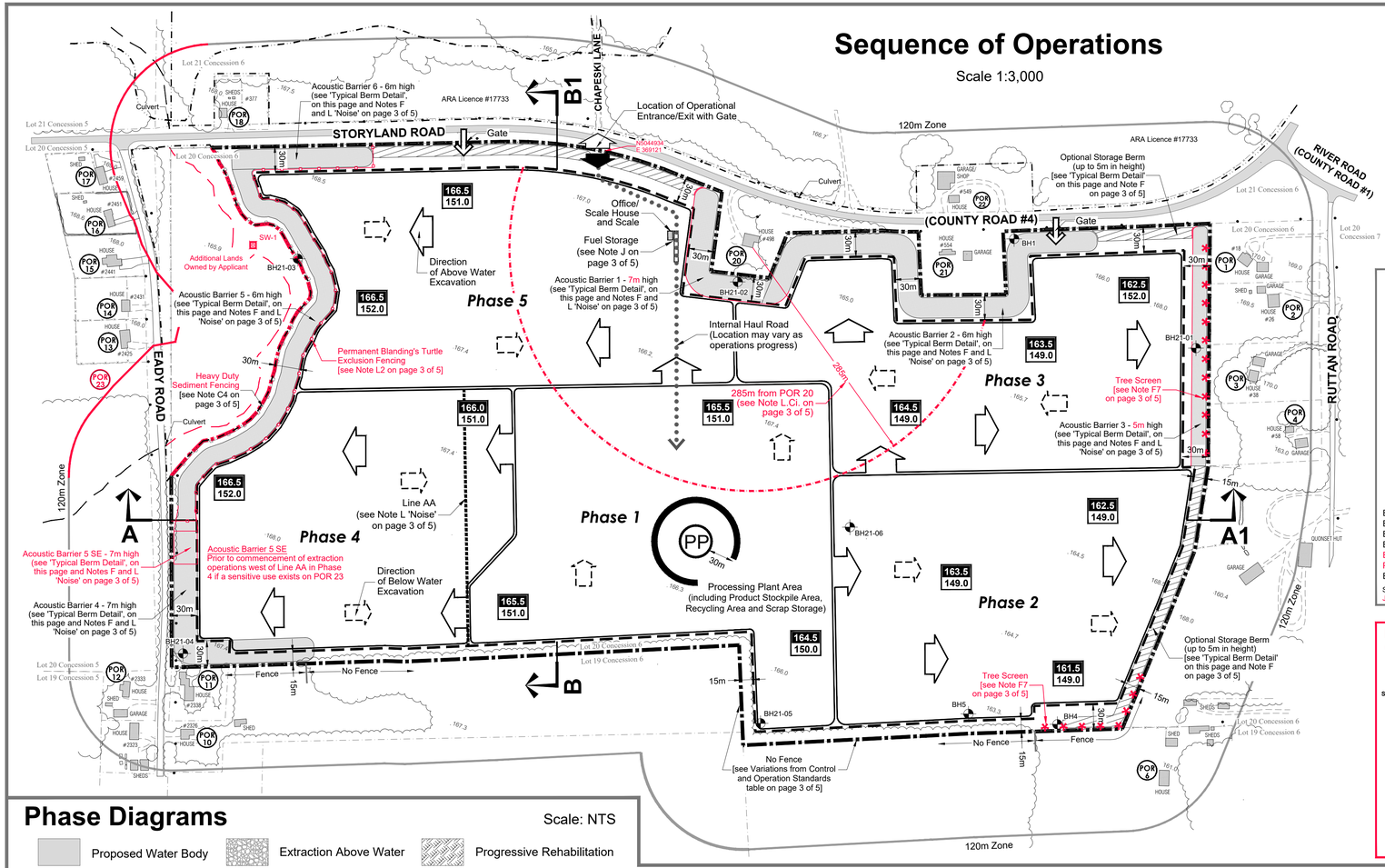
Drawing No.

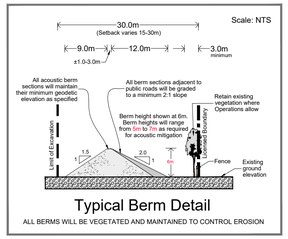
1 OF 5

K:\9137W Renfrew Twp Horton\A\Exfeplan 1of5 September2023.dwg

Sequence of Operations

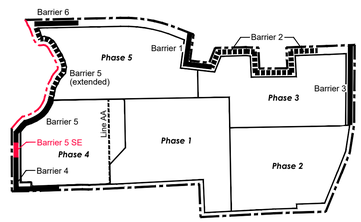
Scale 1:3,000





Phasing of Acoustic Berms

Scale: NTS



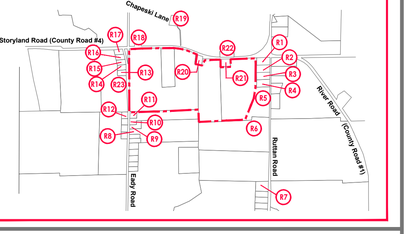
Barrier 1 - Prior to commencement of operations in Phase 1 and 2.
Barrier 2/3 - Prior to commencement of extraction operations in Phase 3.
Barrier 4/5 - Prior to commencement of extraction operations west of Line AA in Phase 4.
Barrier 5 (extended) - When operating in Phase 5.
Barrier 5 SE - Prior to commencement of extraction operations west of Line AA in Phase 4 if a sensitive use exists on POR 23.
Barrier 6 - Prior to commencement of extraction operations in Phase 5.

Source: Acoustic Assessment for the Proposed Storyland Pit Township of Horton, County of Renfrew, Ontario" January 2024 (Source: Freefield Ltd.)

Noise Sensitive Receptor Locations

(adapted from Freefield Ltd., January 2024)

Scale: NTS



Phase Diagrams

Scale: NTS

Proposed Water Body
Stripping
Extraction Above Water
Extraction Below Water
Progressive Rehabilitation
Final Rehabilitation

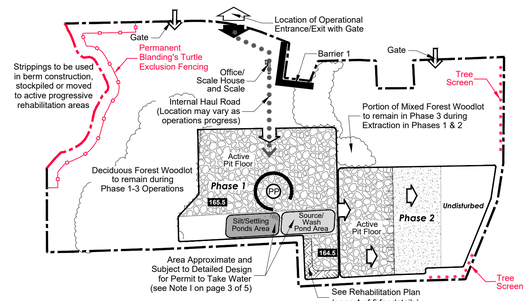


Diagram 1 (Phase 1 & 2 Above Water)

1. Site preparation in Phase 1 to include: confirm that there is existing fencing on the licensed boundary; install 1.2m marker posts on south portion of licensed boundary where there is no fencing; install Blanding's Turtle exclusion fencing; plant tree screen between houses on Ruttan Road and the pit; removal of vegetation where applicable; initial stripping of overburden/topsoil and constructing berms as shown; and establishing operational entrance/exit.
2. Build office/scale house and scale as required on-site.
3. Establish fuel storage and equipment parking/highway truck parking areas on-site.
4. Begin Phase 1 and 2 above water extraction in the direction as shown.
5. Construct processing plant. Source/settling ponds may be created during Phase 1 extraction in the approximate areas as shown.
6. Initiate progressive rehabilitation of above water side slopes in Phase 1 as shown.
7. Establish scrap area in the vicinity of the processing plant.
8. Commence site preparation in Phase 3.

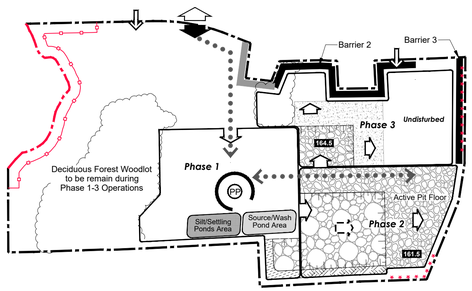


Diagram 2

(Phase 2 Below Water / Phase 3 Above Water)

1. Site preparation in Phase 3 to include: removal of vegetation where applicable; initial stripping of overburden/topsoil and constructing berms as shown;
2. Begin Phase 3 above water extraction in the direction as shown.
3. Extraction below water to occur in the eastern portion of Phase 1 and western portion of Phase 2, in an easterly direction.
4. Continue rehabilitation activities of above water side slopes in Phase 2.
5. Commence site preparation in Phase 4.

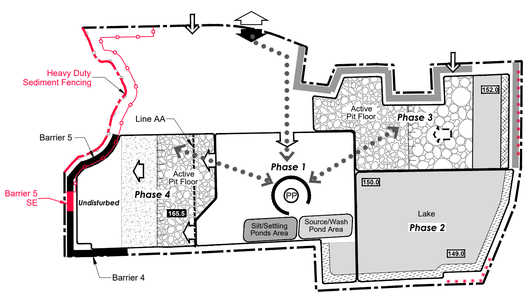


Diagram 3

(Phase 3 Below Water / Phase 4 Above Water)

1. Site preparation in Phase 4 to include: removal of vegetation where applicable; initial stripping of overburden/topsoil, constructing berms and installation of heavy duty sediment fencing as shown;
2. Begin Phase 4 above water extraction in the direction as shown.
3. Continue below water extraction in Phase 3.
4. Finalize side slope rehabilitation in Phase 2.
5. Commence site preparation in Phase 5.

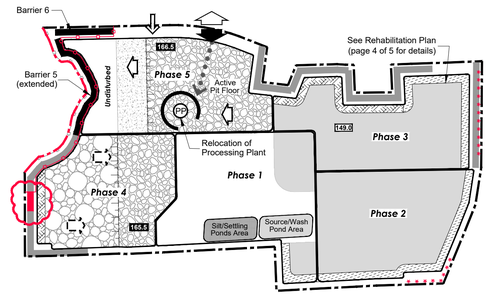


Diagram 4

(Phase 4 Below Water / Phase 5 Above Water)

1. Site preparation in Phase 5 to include: removal of vegetation where applicable; initial stripping of overburden/topsoil and constructing berms as shown;
2. Begin Phase 5 above water extraction in the direction as shown.
3. Commence Phase 4 below water extraction and continue below water extraction in Phase 1.
4. Continue progressive rehabilitation in Phase 3 and begin progressive rehabilitation in Phase 4.
5. Processing Plant to be moved to Phase 5 once material above water table has been mined and sufficient operational area is available.

Not Shown on Phase Diagrams

1. The processing plant will remain on site until the encroachment of below water extraction in Phase 5 requires the removal of the plant.
2. Remove any equipment, scrap, haul roads and buildings on site.
3. Finalize rehabilitation of site (see Rehabilitation Plan on page 4 of 5 for details).

Legal Description

PART OF LOT 20 CONCESSION 6
(geographic township of Horton)
TOWNSHIP OF HORTON
COUNTY OF RENFREW

Legend

- Boundary of Area to be Licensed
- Existing Fence — PAGE WIRE FENCE UNLESS OTHERWISE NOTED
- Existing Spot Elevation — METRES ABOVE SEA LEVEL
- Private Laneway
- Farm/Field Access
- Existing Vegetation
- Drainage Feature
- Unevaluated Wetland — ONTARIO GEOHUB OPEN DATA
- Monitoring Well Locations — GOLDER 2021
- Surface Water Monitor — WSP 2021
- Category 3 Butternut Trees — FROM McKINLEY ENVIRONMENTAL (2022)
- Cross Sections — SEE PAGE 4 OF 4 FOR EXISTING AND REHABILITATED CROSS SECTIONS
- Limit of Excavation — ALL SETBACKS ARE DRAWN TO SCALE AND SHOW LABELLED DISTANCES
- Existing Licensed Boundary — ARA LICENCE #17733
- General Direction of Above Water Excavation — SEE NOTES ON THIS PAGE
- Operational Access — MAINTAINED BY A GATE WHICH WILL BE CLOSED WHEN PIT IS NOT IN OPERATION
- Direction of Below Water Excavation — SEE NOTES ON THIS PAGE/PAGE 3 OF 5
- Acoustic Berm — SEE "TYPICAL BERM DETAIL" AND NOTES ON THIS PAGE/PAGE 3 OF 5
- Optional Storage Berm — SEE "TYPICAL BERM DETAIL" AND NOTES ON THIS PAGE/PAGE 3 OF 5
- Elevation — ABOVE WATER DEPTH OF EXTRACTION; MAXIMUM DEPTH OF BELOW WATER EXTRACTION/PIT FLOOR
- Internal Haul Road — LOCATION TO VARY AS OPERATIONS PROGRESS
- Receptor Locations — WITHIN 120m OF THE SITE
- Tree Screen — LOCATION APPROXIMATE

Site Plan Amendments

No.	Date	Description	By

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
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MNRF Approval Stamp

Stamp

Applicant

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Rob Pierce
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Vice President Planning and Development

Project

Storyland Pit

ARA Licence Reference No.

Pre-approval review:

Responses to Technical Review - Feb. 2024

For Submittal to MNRF - November 2022

Plan Scale: **See Plan**

SCALE
50 0 50 100
METRES

Plot Scale 1:3 [1mm = 3 units] MODEL

Drawn By D.G.S.

Checked By N.D.

File No. 9137W

File Name

OPERATIONAL PLAN

Drawing No.

2 OF 5

K:\9137W Renfrew Twp Horton\A\Storyland Pit Operplan 2of5 February2024.dwg

A. General
1. This site plan is prepared under the Aggregate Resources Act (ARA) for a Class A licence for a pit below the ground water table and follows the Aggregate Resources of Ontario: Site Plan Standards August 2020.
2. Area Calculations:
   Licence Area: 65.6 hectares (162 acres)   Limit of Excavation: 55.9 hectares (138 acres)
3. The maximum number of tonnes of aggregate to be removed from this site is 1,000,000 tonnes in any calendar year.
4. An office/scale house, scale and processing plant will be located on the site as shown on the Sequence of Operations drawing on page 2 of 5. Any required lighting around the office, scale house, processing plant or other areas of the pit shall be directed away from the adjacent woodland and wetland to the extent practical to avoid unnecessary wildlife disturbance.
5. The elevation of the on-site groundwater table ranges from 165 masl in the western portion of the site to 160 masl in the eastern portion of the site The existing water table elevations are shown on each cross section on page 5 of 5.
6. Setbacks will be as shown and labelled on the Sequence of Operations Diagram (page 2 of 5) and on the Existing Features Plan (page 1 of 5).
7. Agricultural production may continue in areas not under extraction.
8. Source Water Protection: The site is not located in a Source Water Protection Area.

B. Hours of Operation
1. Operation of the pit may take place on a 24 hour basis.

C. Site Access and Fencing
1. The existing field accesses may be utilized for monitoring, setback maintenance and agricultural access. The accesses shall be gated, kept closed during hours of non-operation and shall be maintained throughout the life of the licence. Aggregate trucks shall not be permitted to access the site at these locations.
2. The site shall be accessed through the operational entrance/exit which will be opposite to Chapeski Lane and it will be gated.
3. The majority of the site is currently fenced. Portions of the south licence boundary within the existing woodlot will not be fenced (see Note M 'Variations from Control and Operation Standards'). Where there is no fencing, 1.2m marker posts will be installed that are visible from one to the other.
4. Heavy duty sediment fencing shall be installed at the edge of the wetland prior to the construction of Acoustic Barrier 5. The silt fence will be installed during the Blanding Turtle's overwintering season prior to the commencement of earthworks for Acoustic Barrier 5 (November 1 to March 30). The heavy duty sediment fence will be removed once the construction of Acoustic Barrier 5 is complete. Permanent Blanding's Turtle Habitat Fencing will be installed at the edge of the 30 m wide wetland setback. The fencing will be installed at the outset of Phase 1 of the pit operation. The installation shall be completed during the Blanding's Turtle overwintering season (November 1 to March 30). See Note L 'Natural Environment' for additional details.

D. Drainage
1. Drainage of undisturbed areas will continue and be in the directions shown on the Existing Features drawing on page 1 of 5.

E. Site Preparation
1. Prior to site preparation, a Spills Contingency Plan shall be developed to address any potential spills from equipment on-site [O.Reg 244/ 97 Section 0.12 (3) 2].
2. Prior to development of the pit, all setbacks from natural heritage features shall be clearly marked under the direction of a qualified ecologist.
3. Timber resources will be salvaged for use as saw logs, fence posts and fuel wood where appropriate. Non-merchantable timber, stumps and brush may be used in for aquatic habitat enhancement or mulched for use in progressive rehabilitation. Excess material not required for uses mentioned above will be burned (with applicable permits).
4. Topsoil and overburden shall be stripped and stored separately in accordance with the Sequence of Operations diagram.
5. Excess topsoil and overburden not required for immediate use in the construction of acoustic berms or rehabilitation, may be temporarily stockpiled inside the licensed area. Topsoil and overburden stockpiles shall be located within the limit of excavation and remain a minimum of 30 metres from the licence boundary and 90 metres from a property with residential use.
6. Temporary topsoil and overburden stockpiles which remain for more than one year shall have their slopes vegetated to control erosion. Seeding shall not be required if these stockpiles have vegetated naturally in the first year.

F. Berms and Screening
1. Berms shall be constructed as specified in the locations shown on the Sequence of Operations (see also 'Phasing of Acoustic Berms' Detail on page 2 of 5). The heights shown are the minimum required for acoustic berms.
2. Berm side slopes shall not exceed 1.5:1 on the interior (extraction) side and 2:1 on the exterior side facing a public road. Berms that are not adjacent to a public road shall have side slopes not exceeding 1:5:1. See 'Typical Berm Detail' on page 2 of 5.
3. Berms shall not be located within three (3.0) metres of the licence boundary.
4. All proposed berms will be constructed in accordance with the 'Typical Berm Detail' on page 2 of 5 and will be vegetated and maintained to control erosion using a low maintenance grass/legume seed mixture (e.g. MTO Seed Mix) composed of Creeping red Fescue, Perennial Ryegrass, Kentucky Bluegrass and White Clover. Temporary erosion control will be implemented as required.
5. Berms shall be maintained (vegetated to prevent erosion) throughout the operational life of the pit.
6. Optional storage berms may fill in gaps between acoustic berms where applicable.
7. Existing vegetation within the setbacks shall be maintained except where noise attenuation berms are required or to accommodate truck entrance. Prior to pit operations, a tree screen consisting of coniferous saplings shall be planted between houses on Ruttan Road and the pit as shown conceptually on the Sequence of Operations (page 2 of 5).
8. Berms that encroach within the limit of extraction shall be removed, and the underlying aggregate may be extracted, as part of final extraction/rehabilitation of the site.

G. Extraction Sequence
1. The operational plan depicts a schematic operations sequence for this property. Phases do not represent any specific or equal time period. The direction of extraction will be in accordance with the Sequence of Operations diagram shown on page 2 of 5. All extraction, processing and transportation equipment operating within these Phases shall comply with the restrictions identified in Note L 'Noise'.
2. Excluding the Phase containing the processing plant, the maximum disturbed area on this site shall not exceed 50% of the site.
3. See Phase Diagrams on page 2 of 5 for details.

H. Extraction Details
1. The maximum depth of extraction is as shown as spot elevations and extraction will occur in up to 2 lifts (maximum lift height of 14m) through the five phases as shown on the Sequence of Operations Diagram on page 2 of 5 and in accordance with the Ministry of Labour requirements. The proposed pit floor will be located at an elevation of 149-152 masl or 10 m to 14 m below the existing ground surface.
2. Aggregate stockpiles will be located on the pit floor (interim elevations) and will move throughout the life of the operations of the pit. Stockpiles will not be located within 30m of the Licensed boundary.
3. Internal haul road locations will vary as extraction progresses and will be located on the above water table (interim) pit floor.

I. Equipment and Processing
1. The equipment used on site for aggregate operations and may include: Wash Plant, Extraction Loaders or Excavators, Dragline, Cutter Suction Dredge and Trucks.
2. The wash plant including associated activities (e.g. source pond, silt pond etc.) is planned to be located in Phase 1 subject to detailed design and applicable Permit to Take Water.

J. Fuel Storage
1. Fuel or associated products may be stored on site. See Sequence of Operations drawing on page 2 of 5. The licensee or permittee shall ensure that fuel storage tanks are installed and maintained in accordance with the *Technical Standards and Safety Act, 2000* [O.Reg 244/ 97 Section 0.12 (3) 1].

K. Scrap and Recycling
1. Temporary scrap storage will be located within the processing plant area. Scrap will only include materials derived from the operation of the pit such as scrap metal or lumber, discarded machinery and equipment. Scrap will not be located within 30m of any body of water or within 30m of the boundary of the site. All scrap will be removed on an ongoing basis. The property will be kept in an orderly condition.
2. Recycling activities:
   a. Recycling of concrete and asphalt will be permitted on this site.
   b. Recyclable asphalt materials will not be stockpiled within:
      • 30m of any water body or man-made pond; or
      • 2 m of the surface of the established water table.
   c. Any rebar and other structural metal must be removed from the recycled material during processing and placed in a designated scrap pile on site which will be removed on an on-going basis.
   d. Removal of recycled aggregate is to be ongoing.
   e. Once the aggregate on site has been depleted there will be no further importation of recyclable materials permitted.
   f. Once final rehabilitation has been completed and approved in accordance with the site plan, all recycling operations must cease.
   g. shall not interfere with the operational phases of the site or rehabilitation of the site.

L. Report Recommendations

1. **Noise: "Acoustic Assessment for the Proposed Storyland Pit Township of Horton, County of Renfrew, Ontario" January 2024 and February 2024 (Source: Freefield Ltd.)**

A. Noise Barriers and Berms

i. Noise barriers and berms are to be provided as per Table 7 and Figure 13, 14 and 15 in the report.

ii. Noise barriers shielding receptors on vacant lots zoned for potential noise sensitive use are only required following development of a noise sensitive use.

iii. Noise shielding portable equipment shall be progressively established to shield line of site from equipment operation to the identified receptors. If development of a noise sensitive use occurs on POR 23, the minimum height of Barrier 5 shall be increased to 7 m.

iv. Noise barriers and berms are to be solid, having no gaps, and are to have a surface density of no less than 20 kg/m2. Examples of suitable barriers or berms are as follow:
- Lift face or existing terrain;
- Earth, gravel or aggregate berms or stockpiles;
- Concrete or brick walls;
- Commercial noise barriers;
- Shipping containers or buildings

B. Wash Plant

The operation of the wash plant and associated diesel generator may take place on a twenty-four-hour basis (24-hour) and shall comply with the following:

i. The wash plant is to be located on the pit floor at a maximum elevation of 165.5 mASL in locations shown in Figure 2 in the report.

ii. Noise barriers are to be provided as per Table7 and Figure14 and 15 in the report or as specified in the ECA.

iii. The maximum outdoor sound power of the generator, if used to provide power to the wash plant, must not exceed the levels given in Table 2 in the report. To achieve these ratings the generator will likely need to be fitted with an exhaust silencer that meets the minimum insertion loss requirements listed in Table 8 in the report. The silencer is to be located inside the enclosures or as close as possible to the location where the exhaust exits the enclosures with the duct material between the silencer and the generator constructed of 16-gauge weather resistant metal. The silencers shall have a high transmission loss casing.

iv. Item iii. above does not apply if hydro is used to provide power to the plant

C. Loaders and Excavators

The operation of the loaders may take place on a twenty-four-hour basis (24-hour) and shall comply with the following:

i. During the daytime period (07:00 to 19:00): A maximum of three loaders or excavators may be in operation concurrently with a maximum of two loaders or excavators in operation at the extraction face except when operating within 285m of POR 20, a maximum of two loaders or excavators may be in operation concurrently with a maximum of one loader or excavator in operation at the extraction face.

ii. During the evening and nighttime period (19:00 to 07:00): A maximum of two loaders or excavators may be in operation concurrently with a maximum of one loader or excavator in operation at the extraction face. However, extraction within 285 m of POR 20 shall not occur during the evening and nighttime period.

D. Trucks

The loading and shipping of product using highway trucks may take place on a twenty-four-hour basis (24-hour) and shall comply with the following:

i. When operating on-site, highway trucks shall not exceed 20 km/h and shall not use compression braking (Jake Brakes).

E. Portable Construction Equipment

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

F. New Process

i. If a new process is introduced to the site, then this process shall be assessed by a qualified acoustical consultant prior to commissioning. Noise mitigation measures shall be reviewed, and altered, if necessary, to ensure that MECP sound level limits are met at all points of reception.

G. If a house is constructed at 152 Storyland Road within 150m of the pit (POR 23), the following additional mitigation measures shall be required:

i. Barrier WP2 would need to be extended in length to connect to Barrier WP3 when operating the Washplant in Phase 1 to Phase 4. No gaps between barriers.

ii. Barrier WP5 would need to be extended in length to connect to Barrier WP6 (no gaps) and increased to 9 m high when operating the Washplant in Phase 5.

iii. Barrier 5 required prior to commencement of extraction in Phase 4 (currently only required when extracting east of Line AA in Phase 4, however, very little difference).

AND one of the following two options when extracting in Phase 4:

iv. Option 1: Barrier 4 and Barrier 5 to be increased to 9 m high at the western boundary of Phase 4. Height of Barrier 4 along southern boundary may remain at 7 m as previously recommended, OR

v. Option 2: Extraction above water of Phase 4 limited to one (1) loader or one (1) excavator during the daytime period (07:00 – 19:00) with no extraction during the evening and nighttime period (19:00 – 07:00). Extraction below water by dredge permitted and to comply with AAR (no changes).

4. **Natural Environment: "Storyland Road Aggregate Development Natural Environment Report & Environmental Impact Statement" November 2022; Addendum #1 September 2023 (Source: McKinley Environmental Solutions)**

A. Tree Protection Mitigation Measures:

i. Soil compaction, vegetation damage, intrusion of construction equipment and other potential impacts on the root systems of trees adjacent to the edge of the development area will be avoided by restricting grading, placement of fill, excavation, and other site alteration activities to the development area. This will be achieved by providing construction fencing or another form of suitable boundary definition to clearly mark the boundaries between the edge of the development area and the retained features. The boundaries between the development area and the retained features will be marked during each phase of tree clearing and operation.

ii. Staff will be provided with the following instructions when clearing trees and vegetation:
- Mark the edge of the tree clearing area to ensure only designated trees are removed. Protect the Critical Root Zone (CRZ) of retained trees, where the CRZ is established as being 10 cm from the trunk of a tree for every centimetre of trunk diameter at breast height (dbh). The CRZ is calculated as dbh x 10 cm;
- When trees to be removed overlap with the CRZ of trees to be retained, cut the roots at the edge of the CRZ and grind down the stumps after tree removal. Do not pull out the stumps. Ensure there is not root pulling or disturbance of the ground within the CRZ;
- If roots must be cut, roots 20 mm or larger shall be cut at right angles with clean and sharp horticultural tools;
- Do not place any material or equipment within the CRZ of any retained tree;
- Do not attach any signs, notices, or posters to any retained tree;
- Do not damage the root system, trunk, or branches of any retained tree; and
- Ensure that exhaust fumes from all equipment are directed away from any retained tree canopy

B. Wetland Setback:

i. 30 m wide setback will be maintained from the edge of the Mixed Willow Deciduous Thicket Swamp during the development of the Site. A Noise Attenuation Berm (acoustic barrier) will be installed within the 30 m wide wetland setback. The Noise Attenuation Berm will be vegetated and it will be constructed as close to the limit of the extraction area as possible.

ii. Marking of Wetland Boundary: The boundary of the Mixed Willow Deciduous Thicket Swamp (wetland) will be marked by a qualified ecologist according to the Ontario Wetland Evaluation System (OWES) methodology. The wetland boundary will be marked prior to the commencement of development and the 30 m wide setback will be identified based on the marked wetland boundary

C. Butternut Tree Regulatory Requirements:

i. Three (3) Category 2 (retainable) Butternut Trees (endangered) were found within the Site (Refer to Section 3.5.3 of the report for additional details). All three (3) Category 2 Butternut Trees will be removed during the development of the Site. The rules and regulations of the Ontario Endangered Species Act (ESA) allow proponents to address requirements for up to fifteen (15) Category 2 Butternuts Trees through the Ministry of Environment, Conservation, and Parks (MECP) Online Impact Registration Process. The MECP Online Impact Registration Process for the three (3) Category 2 Butternut Trees has been completed (Registration #M-103-3428458887, refer to Appendix D of the report). The rules and regulations of the Ontario ESA require projects that are registered through the MECP Online Impact Registration Process to compensate for impacts to Butternut Trees by planting Butternut seedlings. A Butternut planting program will be undertaken to compensate for the impacts to the Category 2 Butternut Trees.

ii. The rules and regulations of the Ontario ESA require 60 Butternut Trees to be planted as compensation for the removal of the three (3) Category 2 Butternut Trees (based on their size and health status). The Rideau Valley Conservation Foundation (RVCF) has been retained to plant the 60 Butternut Trees as part of a reforestation project at the Foley Mountain Conservation Area. As part of their scope of work, the RVCF will produce Butternut seedlings through their ongoing Butternut Stewardship Program. The RVCF will also complete all monitoring, tending, and reporting requirements as required by the rules and regulations of the Ontario ESA.

iii. Four (4) Category 3 (archivable) Butternut Trees (endangered) were found within the Site (Refer to Section 3.5.3 of the report for additional details). All four (4) Category 3 Butternut Trees will be removed during the development of the Site. The rules and regulations of the Ontario ESA allow proponents to address requirements for up to five (5) Category 3 Butternuts Trees through the MECP Online Impact Registration Process. The MECP Online Impact Registration Process for the four (4) Category 3 Butternut Trees has been completed (Registration #M-102-7522761452). The rules and regulations of the Ontario ESA require projects that are registered through the MECP Online Impact Registration Process to compensate for impacts to Category 3 Butternut Trees by undertaking Butternut Archiving. A Butternut planting program will be undertaken to compensate for the impacts to the Category 3 Butternut Trees.

iv. The Forest Gene Conservation Association (FGCA) will be retained to undertake Butternut Archiving to offset the impacts to the Category 3 Butternut Trees, as required by the rules and regulations of the Ontario ESA. If required, the FGCA's scope of work will include all activities related to the Butternut Archiving requirement, including scion collection, grafting, tending, out-planting, monitoring, and reporting, as specified by the rules and regulations of the Ontario ESA.

D. Construction Stage Mitigation Measures:

Construction stage mitigation measures for Species at Risk (SAR) and wildlife will include the following:

i. Tree Clearing Direction: Vegetation Clearing Direction: Vegetation will be cleared from northwest to the southeast (within each phase of the development). This will encourage any wildlife fleeing the development area to move towards the adjacent forest located south and southeast of the Site;

iii. Permanent Blanding's Turtle Exclusion Fencing: Permanent Wildlife Exclusion Fencing will be installed at the edge of the 30 m wide wetland setback. The Permanent Wildlife Exclusion Fencing will be installed at the outset of Phase 1 of the development and will remain in place throughout the operational lifespan of the pit. The fencing will conform to the requirements for reptiles and amphibians outlined in the document: *Best Management Practices for Mitigating the Effects of Roads on Amphibian and Reptile Species in Ontario* (Gunson et al. 2016). Designated staff from the licensee will inspect the permanent fencing once a month throughout the turtle active season (between April 15th and October 15th each year). Any deficiencies that are identified shall be promptly corrected;

iv. Vehicle Operation: Vehicles and equipment are to be operated on Construction Travelways (e.g. roads within the development area) at a speed at which drivers are able to stop safely to avoid wildlife;

v. Species at Risk (SAR) Encounters: If a Species at Risk (SAR) is encountered in the development area, construction in the vicinity must be stopped immediately and measures must be taken to ensure that the SAR is not harmed. The project biologist and the Ministry of Environment, Conservation, and Parks (MECP) must be contacted to discuss how to proceed prior to the recommencement of work;

vi. General Provisions: General provisions for the management of the development area include the following: Do not harm, feed, or unnecessarily harass wildlife; Drive slowly and avoid hitting wildlife; and Keep the development area tidy and free of garbage and food wastes. Secure all garbage in appropriate sealed containers.

vii. Timing Windows: In consideration of the core migratory bird nesting season and active season for potential species at risk, the clearing of trees and vegetation including any grasses/hay in agricultural fields must be limited to the time period between November 1 and March 30 each year.

viii. Outdoor Lighting Fixtures: Where feasible and compatible with the operational requirements, the outdoor lighting fixtures will be installed to direct artificial light away from the adjacent natural heritage features (e.g. wetland and forest).

3. **Archaeology: "Stage 1 Archaeological Assessment: Storyland Road, Part Lot 20, Concession 6, Geographic Township of Horton, County of Renfrew, Ontario" March 2021 (Source: Paterson Group) and "Stage 2 Archaeological Assessment: 432 Storyland Road, Part Lot 20, Concession 6, PIN 57271-0024 Geographic Township of Horton, County of Renfrew, Ontario" June 2021 (Source: Matrix Heritage Inc.)**

i. Based on the results of this investigation it is recommended that: No further archaeological study is required for the subject property as delineated in Map 1 of the report (Stage 2 assessment).

4. **A. Hydrogeology: "Level 1 and Level 2 Water Report Proposed Storyland Pit, Horton Township Ontario" November 2022 and MECP responses (July 28, 2023 and August 16, 2023) (Source: WSP Golder)**

The following water level monitoring program shall be implemented by the Licensee:

i. Quarterly water levels shall be collected from BH21-01, BH21-02, BH21-03, BH21-04, BH-1

ii. Provided that there is no significant groundwater level decrease measured in the groundwater monitoring well adjacent to the wetland (BH21-03), the water level monitoring in the wetland (i.e. at staff gauge SW-1) shall be delayed until just prior to the start of extraction in Phase 4. The installation of the data logger and the manual readings at SW-1 would be required at that time. Once the datalogger is installed at staff gauge SW-1, it shall be set to record water level measurements at least once per day and the data shall be downloaded on a quarterly basis.

iii. The owners of the private wells located along Storyland Road, Eady Road and Ruttan Road in proximity to the pit will be invited to participate in the groundwater level monitoring program. If approval from the landowner is granted, water levels in these private wells will be measured periodically as the operations proceed over time.

iv. The data obtained as part of the annual monitoring program shall be reviewed on a regular basis by a qualified person (i.e. geoscientist or professional engineer with the appropriate qualifications and experience). Based on this data review, adjustments to the monitoring shall be proposed, if warranted.

v. If the results of the data review indicate that there is the potential for an adverse impact(s), a technical report shall be prepared by a qualified person and submitted by the licensee to the MECP and MNRF.

vi. Prior to commencement of site operations, a private well survey of the local residences in the vicinity of the site shall be conducted subject to the approval of the landowner. This private well survey shall include the collection of well water samples and the chemical, physical and bacteriological analyses of the well water samples collected from private wells in the area of the Storyland Pit.

vii. Prior to commencement of site operations, selected monitoring wells on the property shall be sampled for routine chemical analyses to define baseline conditions.

viii. In the event of a well interference complaint, the Licensee shall implement the revised Complaints Response Program as included in Attachment 3 of the WSP response to MECP comments dated July 28, 2023.

B. Maximum Predicted Water Table Report: "Proposed Storyland Pit Horton Township, Ontario" November 2022 (Source: WSP Golder)

i. Based on the available groundwater elevation data, the maximum predicted water table on the site is 165.3 metres asl on the western edge of the extraction area corner (as measured at BH21-03).

ii. Based on the groundwater elevation data measured at BH4 located on the southeastern side of the site, the water table slopes down moving from west to southeast, and the maximum predicted water table on the east side of the site is approximately 159.9 metres asl.

5. **Traffic: "Traffic Impact Assessment, Proposed Mineral Extraction Site 432 Storyland Road, County of Renfrew" November 3, 2022 (Source: Castleglenn Consultants Ltd.)**

The preferred access location from a traffic operational perspective offering the least disruption to surrounding lands and residents was found to be directly opposite the Storyland Road/Chapeski Lane intersection. The proposed access does not require any auxiliary slip nor storage lanes, but remains to be designed in terms of throat length, tapers, curve radii and drainage accommodation.

M. Variations from Control and Operation Standards

No.	O.Reg 244/97 Section 0.13	Variation	Rationale
1	(3)(a)	Fencing is not required along a portion of the southern boundary that runs through the woodlot.	Lands are not publicly accessible which will limit potential access to this area of the site. Furthermore, this variation will avoid unnecessary disturbance to the woodland. A portion of the south licensed boundary will be demarcated by 1.2m high marker posts that are visible from one to the other.
2	(1)19i	Below water side slopes may vary from a slope that is at least three horizontal metres for every vertical metre (3:1). These will slope at minimum to the natural angle of repose.	Slopes will be no steeper than a 2:1 slope below water or the natural angle of repose.

Legal Description

PART OF LOT 20 CONCESSION 6
(geographic township of Horton)
TOWNSHIP OF HORTON
COUNTY OF RENFREW

Site Plan Amendments

No.	Date	Description	By

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
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MNRF Approval Stamp

Stamp

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Vice President Planning and Development

Project

Storyland Pit

ARA Licence Reference No.

Pre-approval review:

Responses to Technical Review - Feb. 2024
For Submittal to MNRF - November 2022

Plan Scale: **NTS**

Plot Scale 1:3 [1mm = 3 units] MODEL

Drawn By D.G.S.
Checked By N.D.
File No. **9137W**

File Name **OPERATIONAL NOTES PLAN**

Drawing No. **3 OF 5**

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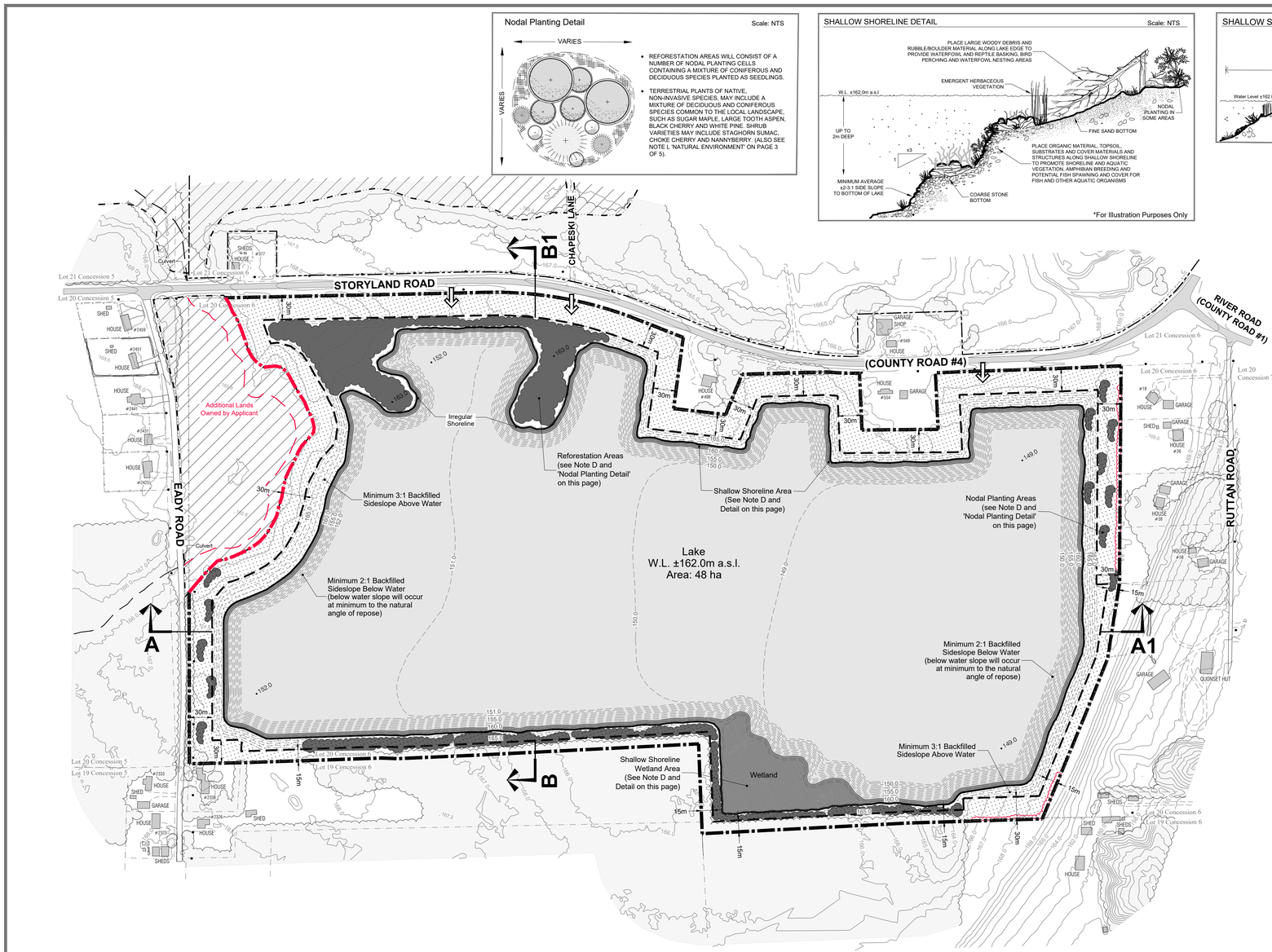

A. General

1. Area Calculations: Licence Area: 65.6 hectares (162 acres)
   Limit of Excavation: 55.9 hectares (138 acres)
2. The rehabilitated landform of this site will include: lake, shallow shoreline and shallow shoreline wetland areas, reforestation, various side slope treatments and nodal tree and shrub planting areas.

B. Phasing

1. The proposed Storyland Pit will be rehabilitated on a progressive basis, corresponding to the operational progression of the pit excavation, to form a lake at final rehabilitation.
2. As the pit is excavated to its maximum, or any other/lesser terminal limits, both horizontally and vertically on a lift-by-lift basis, progressive rehabilitation will follow provided the subject area is of an appropriate area to undergo rehabilitation (See Note G on page 3 of 5 for details).
3. The excavation perimeter will be fully side sloped at a maximum 2:1 (from original ground to floor) at a portion of the north, the entire west and the entire south side slope areas. See Rehabilitation Plan drawing and Note D on this page.
4. Side slopes will be vegetated where located above the final water level of the pit lake and will include nodal tree and shrub plantings in suitable locations in order to introduce a diversity of native vegetation types and species that are anticipated to spread around the rehabilitated side slopes (see Note D and 'Nodal Planting Detail' on this page).
5. Excluding the Phase containing the processing plant, the maximum disturbed area on this site shall not exceed 50% of the site.

C. Slopes and Grading

1. Topsoil and overburden will be used in the progressive rehabilitation of the side slope areas. Overburden and/or imported material will be used to backfill pit faces to create the topography of the side slopes (i.e. 3:1 slope). Above water side slope areas that will be vegetated will be covered with a minimum 15 cm of topsoil/organic matter prior to planting. Sloping below water will be a minimum 2:1 backfilled sideslope (below water slope will occur at minimum to the natural angle of repose)
2. Importation of fill/excess soil:
   a. Excess soil, as defined in Ontario Regulation 244/97 may be imported to this site to facilitate the following rehabilitation:
      i. Creation of 3:1 slopes (or sloping ratio otherwise described on the final rehabilitation page)
      ii. Top dressing to establish vegetation
   b. Liquid soil, as defined in Ontario Regulation 406/19 under the Environmental Protection Act, is not authorized for importation to the site.
   c. The quality of excess soil imported to the site for final placement must be equivalent to or more stringent than the applicable excess soil quality standards as determined in accordance with Ontario Regulation 244/97 as amended from time to time and must be consistent with the site conditions and the end use identified in the approved rehabilitation plan.
   d. Where a qualified person is retained or required to be retained in accordance with Ontario Regulation 244/97, the quality, storage, and final placement of excess soils shall be done according to the advice of the qualified person.
   e. Excess soil imported to facilitate rehabilitation as described on this site plan shall be undertaken in accordance with Ontario Regulation 244/97 under the Aggregate Resources Act, as amended from time to time.
   f. The cumulative total amount of excess soil that may be imported to this site for rehabilitation purposes is 2,000,000 m³

D. Proposed Vegetation and Rehabilitated Features

1. All planting and seeding will consist of native species. All ground covers on side slopes will be established as part of the phased stripping operations that proceed extraction and will be maintained and replaced as soon as possible if the vegetative cover fails to establish itself to control erosion.

2. *Shallow Shoreline Area Habitat Creation*
   Shallow shoreline areas will be created around the perimeter of the lake. Shallow shoreline habitats shall be created up to 2 m deep and shall include habitat features such as boulders, submerged logs, etc. Organic material and topsoil shall be added to the shoreline areas to promote shoreline vegetation, and the placement of basking logs along the shoreline is recommended to create turtle basking areas, waterfowl nesting areas and bird perching sites (see "Shallow Shoreline Detail" on this page). Shoreline and Aquatic plantings will coincide with the final stages of site rehabilitation. Species suitable for aquatic plantings are listed in the species planting list on this page.

3. *Shallow Shoreline Wetland Habitat*
   Wetland areas will be created along the shoreline in the southeast part of the lake. These areas will be backfilled to the desired elevations and plants shall be established by broadcast seeding an Ontario Native Wetland/Riparian Restoration Seed Mix.

4. *Terrestrial Habitat Creation on sideslope and in setback areas*
   Side slope areas above the water table will be covered with a minimum 15 cm of topsoil/organic matter and planted/seeded. Any undisturbed setback areas will also be planted in nodal plantings and seeded with Ontario Native Grassland Seed Mix.

5. *Reforestation and Nodal Plantings*
   Terrestrial nodal plantings on the side slope and within the setback areas and reforestation areas shall include a mixture of coniferous and deciduous tree and shrub species to promote species diversity and provide a variety of species to compensate for any substrate deficiencies (see nodal planting detail on this page). Recommended species are outlined in the species planting list. The establishment of nodal planting areas will occur progressively and follow the sequence of excavation and side slope/setback grading and seeding. Nodal planting areas are conceptually shown on the drawing.
   A minimum of 1,200 seedlings per ha will be planted in the nodal planting and reforestation areas. Planting would be at approximately 3 to 5 m spacing. A survival target rate of at least 75% will apply after two years of planting (900 trees / ha). Infill planting will be completed if the survival target rate is not exceeded after year two.
   Trees planted are recommended to be a variety of heights consisting of bare root stalk a minimum of 30 cm in height. All planting stalk is to be in good condition without broken stems or moldy or rotten roots with a sufficiently developed root ball to sustain planting. Based on availability, selecting trees of a variety of heights (30cm to 90cm) is recommended.
   Guarding of deciduous trees vulnerable to rodent damage and mulching with either coco discs or wood chips will be implemented.
   Shrubs such as nannyberry, red elderberry and choke cherry shall be used to add diversity and increase pollinator/wildlife diversity within the nodal planting and reforestation areas. All installed shrubs are recommended to consist of potted material in 1-3 gallon pots, or bare root stock that are at least 25 cm high, depending on availability.
   Tree and shrub plantings shall occur in the spring, e.g. May, or fall, e.g. mid-September to early-October. Soil compaction shall be avoided to provide optimal conditions for plant growth. Where required the soil will be tilled prior to planting. Trees and shrubs are to be planted in a staggered pattern to simulate natural regeneration and allow for natural regeneration to infill spaces.
   Planted areas shall be monitored for invasive species with any detected invasive species being removed using best practices.

6. *Rehabilitated Landform*
   The proposed rehabilitation includes an opportunity to enhance the biological diversity of the local landscape by providing features that will attract migratory waterfowl and terrestrial and aquatic habitat features that will be of value to locally resident wildlife. Rehabilitation of this site involves the creation of 48 ha of lake and terrestrial landform comprised of above water overburden side slopes and setback areas. Below water side slopes will be comprised of overburden and/or imported material. Some of the rehabilitated area will be rehabilitated to forest cover through nodal tree and shrub plantings as shown conceptually on this plan. The final landform will be in accordance with the drawing as shown on this page.

E. Drainage

1. Final surface drainage will follow the rehabilitated contours as shown and be directed towards the post-extraction lake and existing wetland.

F. Final Rehabilitation

1. No buildings or structures associated with aggregate operations will remain on site.
2. The water level of the proposed lake (±162m a.s.l.) and the post- extraction ground water table, are as shown on pages 1, 4 and 5 of 5 as per hydrogeological/ hydrological assessment.

Species Planting List - Recommended Species

Nodal Plantings/Reforestation	Wetland/Shoreline Areas	Above Shoreline Area
Sugar Maple	Ontario Native Wetland/ Riparian Restoration Seed Mix	Ontario Native Grassland Seed Mix
Large Tooth Aspen		
White Pine		
Basswood		
Black Cherry		
Ironwood		
Red Oak		
White Birch		
Staghorn Sumac		
Choke Cherry		
Nannyberry		
Red Elderberry		

Legal Description

PART OF LOT 20 CONCESSION 6
(geographic township of Horton)
TOWNSHIP OF HORTON
COUNTY OF RENFREW

Legend

- Boundary of Area to be Licensed
- Contour with Elevation (METRES ABOVE SEA LEVEL)
- Existing Fence (PAGE WIRE FENCE UNLESS OTHERWISE NOTED)
- Building/Structure (LOCATION AND USE FOR BUILDINGS ON-SITE AND WITHIN 120m ARE SHOWN ON THIS PAGE.)
- Public Road (Paved)
  Public Road (Gravel)
- Private Laneway
- Field Access
- Existing Vegetation
- Drainage Feature
- Unevaluated Wetland (ONTARIO GEOHUB OPEN DATA)
- Cross Sections (SEE PAGE 5 OF 5 FOR EXISTING AND REHABILITATED CROSS SECTIONS)
- Limit of Excavation (ALL SETBACKS ARE DRAWN TO SCALE AND SHOW LABELLED DISTANCES)
- Existing Licensed Boundary (ARA LICENCE #17733)
- Proposed Contour (METRES ABOVE SEA LEVEL (m A.S.L.))
- Proposed Elevation (REHABILITATED ELEVATION)
- Nodal Planting Areas (LOCATION APPROXIMATE)
- Post Extraction Lake
- Shallow Shoreline Area (SEE DETAIL ON THIS PAGE)
- Grassland Area (SEE NOTE D ON THIS PAGE)

Site Plan Amendments

No.	Date	Description	By

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Project

Storyland Pit

ARA Licence Reference No.

Pre-approval review:

Responses to Technical Review - Sept. 2023

For Submittal to MNRF - November 2022

Plan Scale **1:3,000 (Arch D)**

SCALE
50 0 50 100
METRES

Plot Scale 1:3 [1mm = 3 units] MODEL

Drawn By D.G.S.

Checked By N.D.

File No. **9137W**

File Name

REHABILITATION PLAN

Drawing No.

4 OF 5

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