Agricultural Land Commission	**AGGREGATE EXTRACTION IN THE ALR – RECLAMATION PLANS AND SUPPORTING DOCUMENTATION**	**POLICY P-13** **Amended June 2025** **April 2021**

This policy is intended to provide information for applicants or agents submitting proposals relating to aggregate extraction as part of a soil or fill use application or Notice of Intent ("NOI") within the BC Agricultural Land Reserve ("ALR"). This policy aims to ensure that aggregate extraction proposals include sufficient information for the Commission to effectively evaluate them, and that proposals incorporate best management practices for extraction and reclamation on ALR land.

Reclamation is a very important consideration when determining if an aggregate extraction activity is consistent with the Commission's mandate of preserving agricultural land for farming and ensuring that this use will not negatively impact future agricultural production. Those submitting proposals related to aggregate extraction should therefore be aware that failure to submit a reclamation plan and supporting documentation may adversely affect the application.

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1.0 RECLAMATION PLANS FOR AGGREGATE EXTRACTION IN THE ALR

Given that the Commission must give priority to protecting and enhancing the size, integrity, and continuity of the ALR (ALCA s. 6), applications proposing aggregate extraction in the ALR should include a reclamation plan that demonstrates how the lands impacted will be reclaimed to an agricultural capability equal to, or better than, pre-disturbance conditions following extraction.

A reclamation plan submitted to the Commission as part of an application for aggregate extraction in the ALR must be prepared by a qualified registered professional ("QRP") with expertise in soil management, reclamation, and agricultural capability assessments (as outlined in *ALC Policy P-10: Criteria for Agricultural Capability Assessments* ("Policy P-10")).

Reclamation plans that are deficient in information may not be given the same weight as reports that are compliant with this Policy.

A reclamation plan should include the following:

a) A detailed soil survey (supported by soil test pits and photos) and agricultural capability analysis of the land(s) to be impacted by the aggregate extraction activity, completed to the standards set in Policy P-10. The agricultural capability analysis should include discussion of all existing resource information (e.g. government or publicly available soil survey and agricultural capability mapping) in the context of the soil survey.

b) An inventory and description of the existing land use within the proposed aggregate extraction area and surrounding lands.

c) A detailed explanation of site preparation, operating, and reclamation activities consistent with Appendix A: Best Management Practices for Aggregate Extraction Activities Occurring in the Agricultural Land Reserve. This should include, but is not limited to:

    i. A topsoil and subsoil management plan addressing stripping, storage and replacement of soil;

    ii. A plan for phased operations and progressive reclamation;

    iii. If backfilling pit areas with fill imported from offsite is contemplated, fill certification procedures and site control measures to ensure that only clean fill material is accepted;

    iv. Erosion control measures for the entire site during all phases, to ensure protection of topsoil stockpiles;

    v. A weed management plan;

vi. A plan for vegetation establishment;

vii. Detailed drainage plans for the rehabilitated site to ensure optimum surface and subsurface drainage conditions;

viii. Final proposed agricultural capability and end land use; and

ix. Closure procedures and certification of the work.

2.0 SUPPORTING DOCUMENTATION

Supporting documentation that provides visual and technical information about site characteristics, the proposed aggregate extraction operation, and the proposed reclamation, is critical for the Commission to effectively evaluate proposals for aggregate extraction in the ALR.

In addition to the reclamation plan, the application should include the following supporting documentation:

a) **Site Plan**: This is a visual representation of the proposed extraction operation. It must show a clear and accurate measurement of proposed areas to be impacted by any part of the site activity and volumes of aggregate removal. The site plan should also show:

   i. Compass direction;

   ii. Proposed area under application with all existing land uses, adjacent land uses, buildings/structures and main physical features (e.g., water courses);

   iii. Parcel number/address, and;

   iv. Any existing or proposed buildings or infrastructure (e.g., fences, ditches or drains).

b) **Cross Sections**: These are plans showing original undisturbed grades, current grades (if different from undisturbed grades), final grades in relation to adjacent natural grades, volume of aggregate to be removed, and proposed slope gradient (%) drawn at an appropriate scale and prepared by a Professional Engineer or Registered BC Land Surveyor. The plans should take into account the configuration of the proposed extraction area and provide an appropriate number of cross sections (east-west, north-south) to give an accurate overview of the entire proposed extraction area and its location on the property. *See example cross sections in Appendix B.*

c) **Extraction Phasing Plan** (if applicable): This is a plan outlining phases of the proposed extraction operation, with a map indicating which part of the extraction area will be open during which time. A clear depiction of the phasing gives the Commission a better understanding of the life of the proposed extraction project, and the timeline for the reclamation of impacted areas.

   i. For example, a project to extract 200,000 m^3 of aggregate from a 16 ha area over 20 years could be divided into four phases, each proposing to extract 50,000 m^3 within a 4 ha area over 5 years.

   ii. *See simplified example of extraction phasing and progressive reclamation in Appendix C.*

d) **Progressive Reclamation Plan** (if applicable): This is a plan detailing reclamation stages, including a map indicating the areas proposed to be reclaimed and their approximate timeline for reclamation.

   i. For the example above, each of the 5-year, 4 ha extraction phases would be reclaimed prior to commencing the next phase of extraction.

   ii. *See simplified example of extraction phasing and progressive reclamation in Appendix C.*

3.0 RELATED POLICY

ALC Policy P-10: Criteria for Agricultural Capability Assessments

ALC Policy P-11: Expert Opinions in Agricultural Land Commission Matters

ALC Policy L-27: Soil and Fill Use Applications for Aggregate Extraction in the ALR

4.0 GLOSSARY

The following key definitions are relevant to this policy:

"**agricultural capability assessment**" means an assessment conducted as per the Land Capability Classification for Agriculture in BC (Kink, 1983) to determine, confirm, or reassess the agricultural capability classification rating of agricultural land.

"**aggregate**" means sand, gravel, crushed stone, quarry rock and similar materials used in the construction and maintenance of civil and structural projects.

"**backfill**" means soil or fill material of acceptable quality (certified) used to replace some or all of the volume during the aggregate extraction.

“coarse fragments” means mineral particles larger than 2 mm in diameter, including gravel, cobbles, stones, and boulders.

“fill” means any material brought onto ALR land other than materials exempted by the ALCA regulations.

“levelling” means reshaping the soil surface within a field or parcel of land to eliminate high and low areas and resulting in a uniform field level (that is, cutting high spots and filling in low spots).

“Notice of Intent” means a notice of intent submitted to the CEO under s. 20.3(1)(c)(ii) of the ALCA, in the form and manner that the CEO requires.

“overburden” means all unconsolidated naturally occurring material overlying bedrock or usable aggregate.

“placement of fill” or **“fill placement”** means to deposit, place, store, or stockpile directly or indirectly, fill on any land in the ALR, where that fill did not previously exist.

“Qualified Registered Professional” or **“QRP”** means a person registered with a professional association including the Association of Professional Engineers and Geoscientist of BC, the Corporation of the Province of British Columbia Land Surveyors, and the British Columbia Institute of Agrologists.

“remove” or **“removal”** means the act of removing soil (including aggregate) from any land in the ALR, where it existed or stood, which place or location shall include a stockpile or other storage facility.

“soil” includes the entire mantle of unconsolidated material above bedrock other than minerals as defined in the *Mineral Tenure Act*.

“soil amendment” means compost, fertilizer, manure, mulch and soil conditioners.

“soil conditioner” means organic or inorganic matter that has beneficial effects on the biological, chemical, or physical properties of soil.

“soil or fill use” means the removal of soil from, or placement of fill on, agricultural land, and does not include a farm use or residential use.

“Soil or Fill Use Application” means an application for permission made for the removal of soil or placement of fill.

“stockpile” means a man-made accumulation of soil, fill, or other organic materials held in reserve for future use, distribution, or removal.

“wood residue” as defined by the Code of Practice for Agricultural Environmental Management means wood or a wood product that (a) is chipped or ground, (b) originates from (i) wood processing, (ii) the clearing of land, if the majority of the greenery is removed and no soil is present, or (iii) trimming or pruning activities, (c) has not been treated or coated with chemicals. including preservatives, glues, paints, varnishes, oils or finishing materials, (d) does not contain a foreign substance harmful to humans, animals, or plants when combusted, (c) has not been exposed to salt water, and (I) has not been used for or recovered from construction or demolition activities.

“wood waste” includes wood materials recovered from construction or demolition activities, and does not include wood residue as defined by the Code of Practice for Agricultural Environmental Management.

APPENDIX A

BEST MANAGEMENT PRACTICES FOR AGGREGATE EXTRACTION ACTIVITIES OCCURRING IN THE AGRICULTURAL LAND RESERVE

Planning is essential to the successful reclamation of agricultural lands located in the ALR. This appendix is intended to provide best management practices for aggregate extraction to both private landowners and industrial operations in the ALR. This information should be used to assist the development, operation, and reclamation of various scales of aggregate extraction operations ranging from small gravel pits and rock quarries to large, long-term industrial operations with multiple phases. This information should also be used to inform the reclamation plan that is created to support an ALC application or Notice of Intent for aggregate extraction in the ALR, as per ALC Policies L-27 and P-13.

This document provides recommendations on:

- Soil management techniques
- Recontouring and subgrade preparation
- Soil replacement (topsoil/subsoil)
- Seedbed preparation and surface rehabilitation
- Drainage and water management
- Weed management

SOIL MANAGEMENT

Prior to aggregate extraction, all existing topsoil must be salvaged under the direction of the QRP for use during reclamation. Additional salvaging of upper subsoil and overburden may be necessary where backfill sources offsite are not readily available, topsoil is shallow or limited overburden is available. The recommendations for soil handling procedures are as follows:

- On-site supervision by a QRP with expertise in soils reclamation during the soil salvaging, stockpiling, storage, and soil replacement process.
- Soil should not to be salvaged, moved, stockpiled or replaced during conditions of adverse soil moisture content including when the soil is saturated, frozen or powdery dry.
- Topsoil should be salvaged from all the following areas:
    - The proposed pit or quarry area;
    - The access road;

    - Any other areas where processing activities or structures will be placed on site; and
    - The proposed stockpile areas for the subsoil and overburden.
- Topsoil, subsoil and overburden should be salvaged and stored separately with separation between piles being at least 2 m, or by a physical barrier approved by the QRP.
- Topsoil salvage depth should be determined prior to excavation as part of the agricultural capability assessment done during pre-disturbance (following Policy P-10) or determined by the QRP on site.
- Topsoil should be salvaged using an excavator with a cleanup bucket.
- Materials should be transported to an appropriately designated storage area (for stockpiling) that will not be disturbed by extraction activities, to avoid double handling materials.
- The area required for stockpile storage should be based on estimates of initial soil salvage volumes.
- Stockpile locations should be sited where they will not be disturbed or subject to erosion, and will not impede site drainage.
- A uniform layer of bark, mulch, or sawdust should be laid down in the storage area prior to stockpile placement.
- Stockpiled soil should be windrowed.
- Stockpiles should be set back from watercourses in accordance with applicable regulations.
- Drainage from, onto, and around the stockpiles should be controlled by ditches, drains, or intercepts.
- Stockpiled soil must not be removed from the property without written permission from the Commission.
- Salvage piles should be limited in height to 3 m. Higher piles must not exceed 3H:1V slope (horizontal to vertical) unless otherwise approved by the Commission.
- Stockpiles should be seeded and established with an appropriate plant cover (i.e. non-weedy species), or a suitable erosion control measure must be applied to protect the stockpiles from wind or water erosion.

SUBGRADE PREPARATION

The Commission frequently requires the backfilling of pits to ensure that the final elevation is consistent with adjacent land and the property's relative elevation. Where a backfilling requirement is imposed, then once all extraction activities are

complete, the pit should be filled with suitable materials that consist of stockpiled overburden and/or fill sourced from offsite. Subgrade (i.e. overburden) preparation should proceed as follows:

- If imported fill is used to backfill, the fill should have the following characteristics:
    - Be of mineral origin only (organic soils are not permitted as fill material but can be used as a top-dress);
    - Have a coarse fragment content less than 5% with no boulders >25 cm in the top 1 metre of the soil profile; and
    - Be no coarser than loamy sand and no finer than silt loam.
- The following are prohibited materials in the ALR and must not be used as fill:
    - Concrete or demolition waste, including masonry rubble, concrete, cement, rebar, drywall, and wood waste;
    - Asphalt;
    - Glass;
    - Synthetic polymer;
    - Treated wood; and
    - Unchipped lumber.
- The final contours of the subgrade should integrate with the surrounding landscape.
- Depending on site topography, any permitted side slopes and/or benches should be re-contoured so that the topography integrates with the surrounding landscape. Slopes should be no steeper than 3.5H:1V (horizontal: vertical) to allow for use of farm equipment on the slopes. Steeper slopes may be allowed in some cases depending on the configuration of the field in order to maximize the amount of flat land (e.g., long narrow extraction pits).
- To avoid severe erosion of topsoil, land that is intended to produce annual crops should have slopes no greater than 20H:1V or 5% slope.
- In the Lower Fraser Valley and Metro Vancouver, the slopes should be less than 1% on cropland to minimize sheet and rill erosion.
- If necessary, upon completion of backfilling the subgrade should be chisel plowed or ripped with a subsoiler to a minimum depth of 60 cm in two directions at right angles.

SOIL REPLACEMENT

Once the subgrade materials have been regraded, available topsoil and/or other suitable soil materials should be used to provide suitable growing media for crop or vegetation establishment.

General Recommendations

- Any stockpiled soils must be replaced in the reverse order from which they were removed.
- The recommended soil profile should consist of (from surface to at depth):
    - 20 – 30 cm of topsoil;
    - 30 cm of subsoil;
    - 50 cm of free draining subgrade; and
    - Overburden or backfill (variable thickness).

  This will vary depending on specific soil conditions present on site.
- Stakes, flagged to the desired replacement thickness, should be placed to assist the machine operator.
- Soil materials should be end dumped and leveled with low ground pressure equipment such as tracked bulldozers.
- Vehicles and equipment should be restricted to designated roads or routes, so that ripping and subsoiling activities can be limited to these specific areas.
- Random repeated running of equipment over leveled areas must be minimized whenever possible.
- Soil compaction levels should be similar to or better than adjacent undisturbed land.

Subsoil Placement

- If subsoil has been retained, the subsoil should be replaced in one lift.
- If imported fill is used as subsoil, then the fill should have a coarse fragment (fragments > 2mm in diameter) content of less than 5% and should not contain any stones or boulders (coarse fragments > 25cm).
- Once subsoil is in place, roughening the subsoil surface is recommended to hold topsoil in place following initial placement.
- If compaction does occur, rip the affected areas to a depth of 60 cm or more with shanks spaced 60 cm apart and then cross rip perpendicular to the first direction.

Topsoil Placement

- Topsoil thickness should be equivalent to what was present before disturbance.
- If the native topsoil is not available for reclamation, then 20-30 cm of imported topsoil (or suitable screened and amended subsoil) should be uniformly spread over the disturbance area.
- Prior to replacement of topsoil, soils should be screened separately to remove coarse fragments except when coarse fragment volume is less than 5%, which is to be determined by a QRP with soil expertise. Coarse fragment content should be no greater than pre-disturbance conditions and no additional coarse fragments should be introduced in the top 25 cm of the soil profile.
- Screening should be carried out under appropriate soil moisture conditions (not excessively wet, frozen or powdery dry).
- Topsoil should not be replaced in areas such as roads or wet depressions that will not be in use for productive agriculture unless required for grass establishment or erosion control.
- If necessary, soil amendments (i.e., fertilizer or suitable organic matter) should be top dressed over the reclamation area. This organic matter may be added in the form of animal or poultry manure or as a cereal or forage cover crop and turned into the top 15 cm of soil.

SEEDBED PREPARATION/SURFACE REHABILITATION

If the disturbance area is not immediately returned to agricultural use upon completion, a seedbed must be prepared, and the area(s) seeded with an appropriate vegetation species, using cover crops when necessary to reduce erosion on slopes, and fertilized.

Seed preparation and surface rehabilitation should take place as follows:

- Till the seed bed just prior to seeding to minimize the time in which the soil surface will be exposed to water and wind erosion.
- Tillage should be completed only under specific soil moisture conditions (not powdery dry or excessively wet).
- The following equipment is suitable depending on the specific soil conditions:
    - Tillage equipment – plows and discs that lift and invert the soil;
    - Cultivators and harrows that lift and stir without inverting the soil; and,

    - In situations where it is undesirable to mix thin topsoil with underlying subsoil (e.g., stony subsoil), use cultivators and harrows rather than plows and deep discs.
- Soil tillage should be carried out across (perpendicular to) slopes to reduce the runoff velocity and the potential for rill formation.
- The rate of application, type of seed mix, and fertilizer are to be determined by the QRP.
- Cereal cover crops such as spring barley, oats, winter wheat or fall rye germinate and develop rapidly. If seeded in mid to late summer, they provide cover by fall but will not generally set seed and will not take over the stand the following year if turned over before seed set.
- Fertilizer (nutrients) should be applied based on soil testing results.
- Use supplementary irrigation to establish and maintain a complete cover.

DRAINAGE/WATER MANAGEMENT

Drainage and water management must be considered for the site and a plan should be prepared by an appropriate QRP to ensure that water is appropriately managed on and offsite. The following drainage and erosion control measures should be considered when designing the plan; however, this will vary depending on specific site conditions:

- Interceptor drains and grassed water runs to slow the velocity of runoff water and prevent erosion.
- Placement of toe slope drains to collect and remove seepage from the subsoil.
- Use of temporary diversion drainage on new areas of topsoil and seeded areas.
- Sedimentation impoundments to protect water quality in downstream areas. The size and location of impoundments are determined by runoff volumes, erosion rates, and required retention times.
- Installation of a soil drainage system (subsurface drainage as needed). This will depend on the end use and agricultural capability.
- Installation of a layer of porous drainage material to reduce the amount of water in the soil.
- The drainage should be installed upon completion of rehabilitation of each phase and prior to establishing any perennial crops other than forage.
- The reclaimed area should be monitored by the QRP following re-seeding to determine whether sufficient drainage has been provided. If poorly

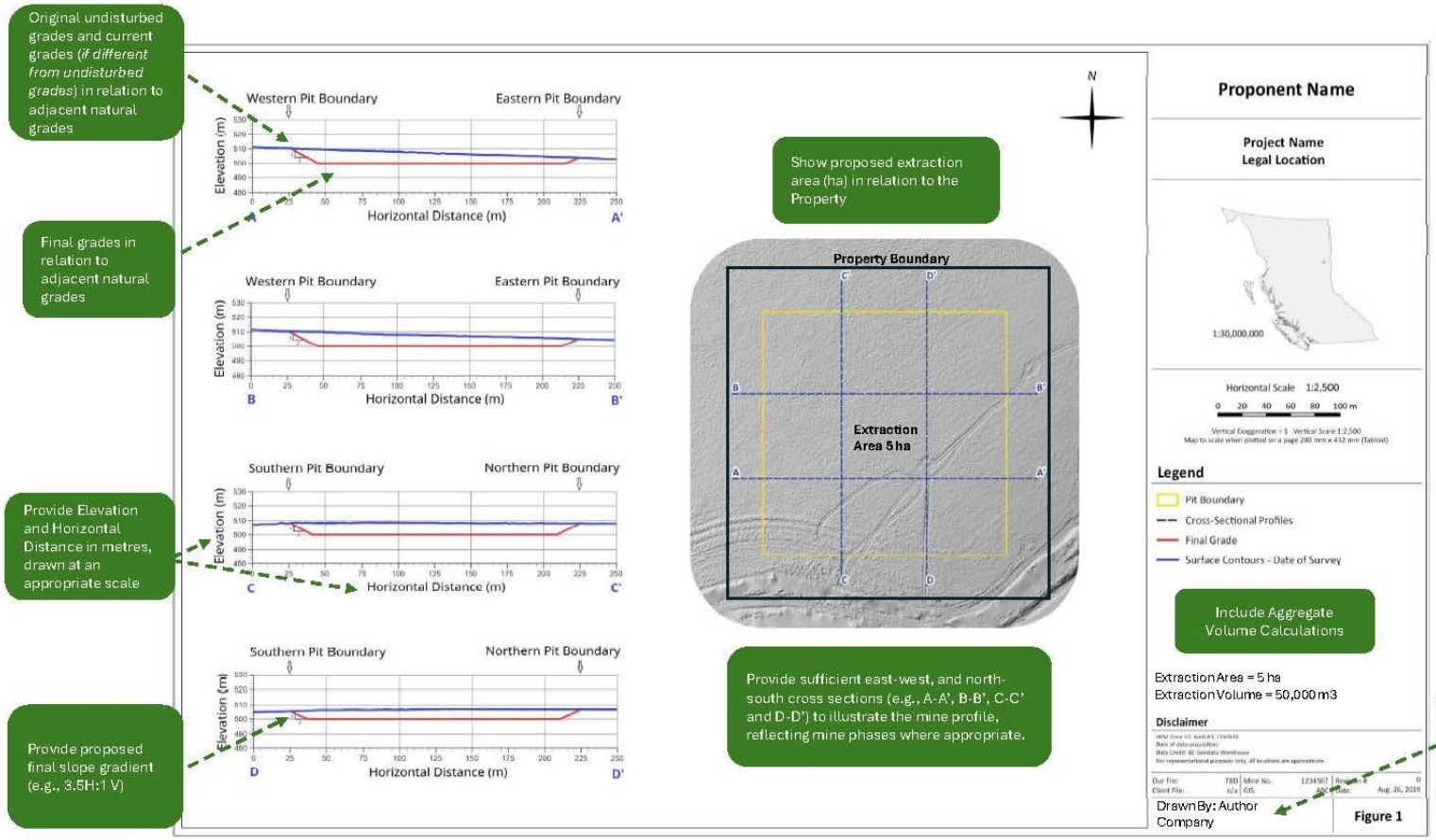
drained areas persist, it may be necessary to install additional drainage structures.

WEED MANAGEMENT

- Weed control must be practiced at all times in conjunction with erosion and sediment control.
- Weeds must be controlled before seed set. The most common practices include:
    - Reseeding with an appropriate vegetative mix that can out-compete weeds; and,
    - Mechanical methods such as tillage, mowing, mulching or use geotextile sheeting; and chemical methods such as the use of herbicides.
- All newly reclaimed areas should be reseeded as soon as possible after soil replacement.

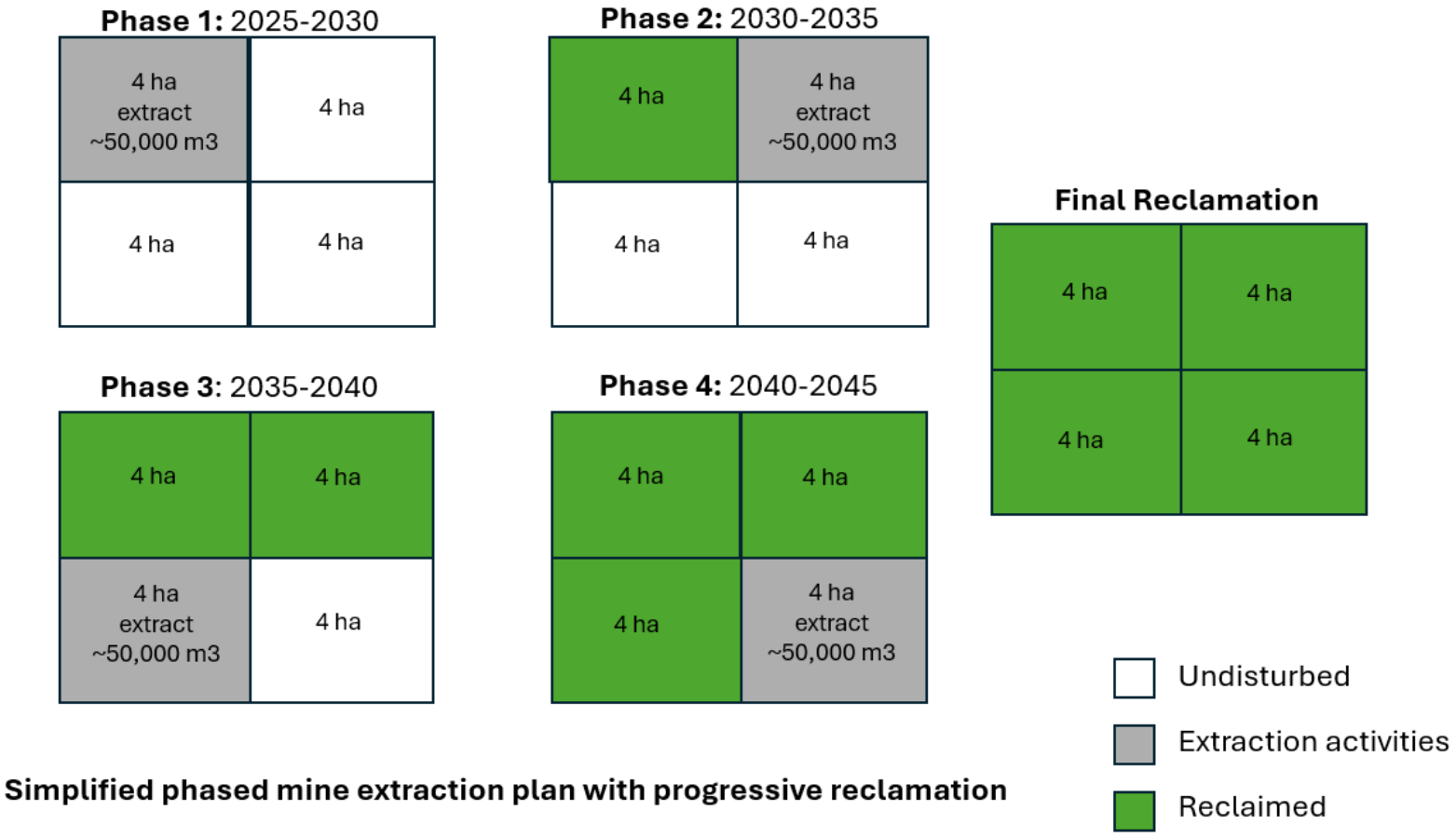
APPENDIX B

EXAMPLE CROSS SECTIONS



APPENDIX C

EXAMPLE EXTRACTION PHASING AND PROGRESSIVE RECLAMATION (SIMPLIFIED)



Simplified phased mine extraction plan with progressive reclamation