BRITISH COLUMBIA | Heritage Branch

Fossil Impact Assessment (FIA) Guidelines for Industry

Purpose- Fossil Impact Prevention

For the natural resource sector in British Columbia (B.C.), the Fossil Impact Assessment (FIA) process provides guidance to industry and land developers about planning projects to minimize their impact on fossil resources and ensure proper recovery of specimens when necessary. A FIA is conducted to determine what impact, if any, a project might have on fossil resources.

When is the Fossil Impact Assessment (FIA) Process Triggered?

The need for assessing impact to fossil resources, using the process steps outlined on the following pages, is triggered by these factors:

- A pipeline project, or as part of a process through Environmental Assessment process, or through the Crown Land and Water Use process (via Front Counter BC).
- Project occurs within an Important Fossil Area in B.C. (see map below).
- Project presents high risk to fossils with a proximity to known significant fossil sites and ground disturbance greater than 30 cm deep, or directly on sedimentary deposits.

Map showing Important Fossil Areas in grey – regions with concentrations of fossils.

FIA Process Steps for Industry Proponents

The following steps are illustrated on the process diagram on page 5.

Step 1. Submit Land Use Application

Evaluation of a land disposition application, either through Front Counter BC (FCBC) or via the Environmental Assessment Office (EAO) for major projects, requires determining whether the development project could adversely impact fossil resources.

FCBC and EAO forward referrals to the Fossil Management Office (FMO), who then review the application and determine the risk to fossil resources (very low, low, medium or high), based on the triggers for the assessment.

Step 2. Chance Find Protocol & Preliminary Study

Depending on the level of risk to fossils and degree of ground disturbance, there are two possible requirement outcomes for a proponent:

A. You will need to have a Basic Chance Find Protocol (CFP) approved by FMO and in place.

B. You will need to hire a Paleontologist to conduct a desktop Preliminary Study, prepare a Preliminary Study Report (PSR), and prepare a site-specific, illustrated, Detailed Chance Find Protocol, both of which get submitted to FMO for approval.

Step 2A. Prepare a Basic Chance Find Protocol

Locations of fossil resources are generally predictable, yet B.C. remains unexplored for fossils. Even when a project presents very low to low risk to fossils in an area where fossils may not be expected, a Basic Chance Find Protocol must be developed.

A Chance Find Protocol is a procedure document that tells a proponent and construction or development personnel how to manage fossil discoveries made during project activities and serves the following purposes:

1. To make workers on site aware of the fossil potential and types of fossils that may be encountered during excavation (site specific) and moving of earth materials.
2. To identify the steps workers and operators should take and who they should contact when a fossil is discovered.
3. To report new fossil finds for data collection by FMO, and in collecting important fossils, to build the record of fossils in B.C. for potential scientific study, display in museums or for educational outreach.

Use the Basic Chance Find Protocol Template available on the FMO website and submit this to FMO for approval.

Step 2B. Hire a Qualified Paleontologist for Preliminary Study Work

The proponent hires a paleontologist to conduct a desktop Preliminary Study Report (PSR), a concise analysis of potential impact on fossils. A list of Qualified Lead Paleontologists is available on the FMO website.

Step 3. Receive PSR Findings

The PSR, prepared for the proponent, is then submitted to FMO for approval. The document makes recommendations about the likelihood of new fossil discoveries in the geology of the project footprint. This is based on an analysis of the proximity of the project to known fossils, types of fossils present, and fossil potential of the underlying geology.

A Detailed Chance Find Protocol is also prepared at this step and submitted to FMO. This protocol may, however, need to be updated if the project's Paleontologist recommends further assessment of fossil resources through a FIA Report.

When the PSR deems the risk to fossil resources is be Low, having a Detailed Chance Find Protocol in place will suffice for the project, and this is adopted by the proponent as Step 4.

When the risk to fossil resources is Medium or High, Step 5 of a FIA will need to commence in advance of the construction or development project.

Step 4. Adopt a Detailed Chance Find Protocol

The Detailed CFP will be a longer document than a Basic CFP and is prepared by the project's Paleontologist using the Detailed Chance Find Protocol Template available on the FMO website. The document contains detailed descriptions and example illustrations of the kinds of fossils likely to be encountered in each rock or sediment type.

Step 5. Hire a Paleontologist for FIA Work

The FIA work determines the pre- to post-development effects of ground disturbance activities on fossil resources within the project footprint. The process begins with the Paleontologist developing a FIA Plan for paleontological field investigation, submitted to FMO for approval.

Upon approval of the plan by FMO, work by the Paleontologist on the FIA activities and reporting commences. The FIA work accomplishes the following:

- Identifies fossil sites in the development area and reviews fossil types, quality, preservation, and assesses the significance of fossils encountered
- Documents, photographs and collects significant fossils encountered to minimize the information lost through development activity
- Evaluates the risk to fossils to make impact management and mitigation recommendations in a FIA Report

- Arranges for transportation and curation of specimens with a recognized Repository

Step 6. Support FIA Reporting and Fossil Collection

A copy of the FIA Report will be submitted to the proponent and to FMO for review.

As needed, the proponent will support the collection and transport of fossil specimens to a recognized Repository for future study, display and storage. A Repository agreement with a museum will be arranged by the Paleontologist as part of the FIA work.

The FIA Report may include **impact mitigation recommendations and actions** for managing adverse impacts to fossil resources. Determining what mitigative actions to pursue is best accomplished through a cooperative approach between the Lead Paleontologist, the proponent, and FMO.

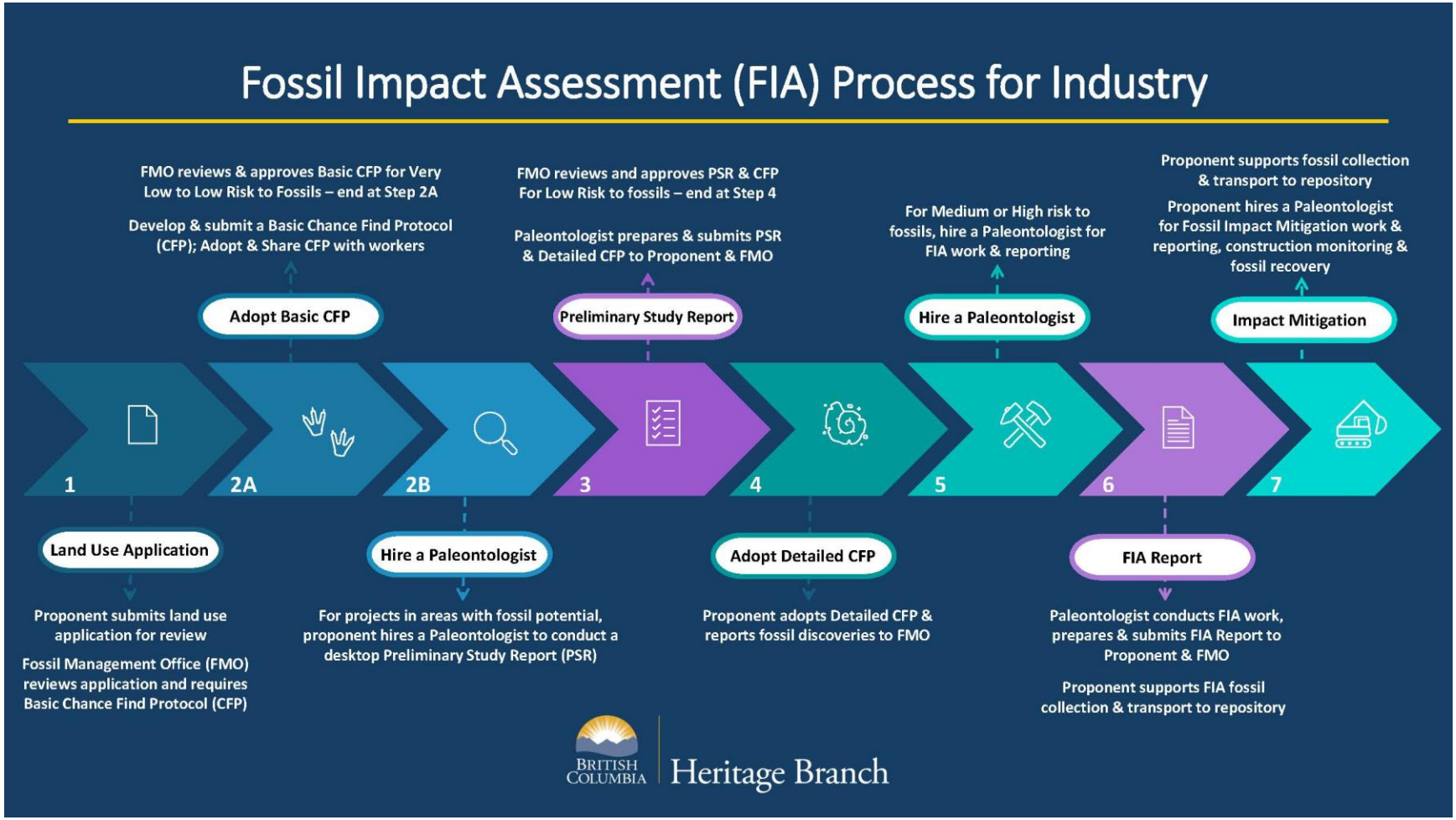
Subsequent fossil impact mitigation work may be needed for the monitoring of significant fossils exposed or displaced during project development activities, leading to Step 7 below.

Step 7. Hire a Paleontologist for Fossil Impact Mitigation Work & Reporting

The proponent may need to hire a qualified Paleontologist to conduct mitigation paleontology. This could be deemed necessary for some projects in highly fossiliferous areas to reduce adverse effects on significant fossil resources through a mitigation and monitoring plan.

Mitigative actions will be project-specific and must be staged appropriately with project development activities to reduce paleontological impact while maintaining safety standards. Activities may include construction monitoring during mechanical excavation of fossiliferous rock. Work may include intermittent inspection of rock exposures and recovery of fossils threatened by ground disturbance as a project proceeds. There may be a need for systematic excavation and salvage of fossil discoveries as the project proceeds.

Adopted use of the Fossil Chance Find Protocol to report discoveries should continue for the lifetime of the project.



Process diagram showing the steps involved in Fossil Impact Assessment.