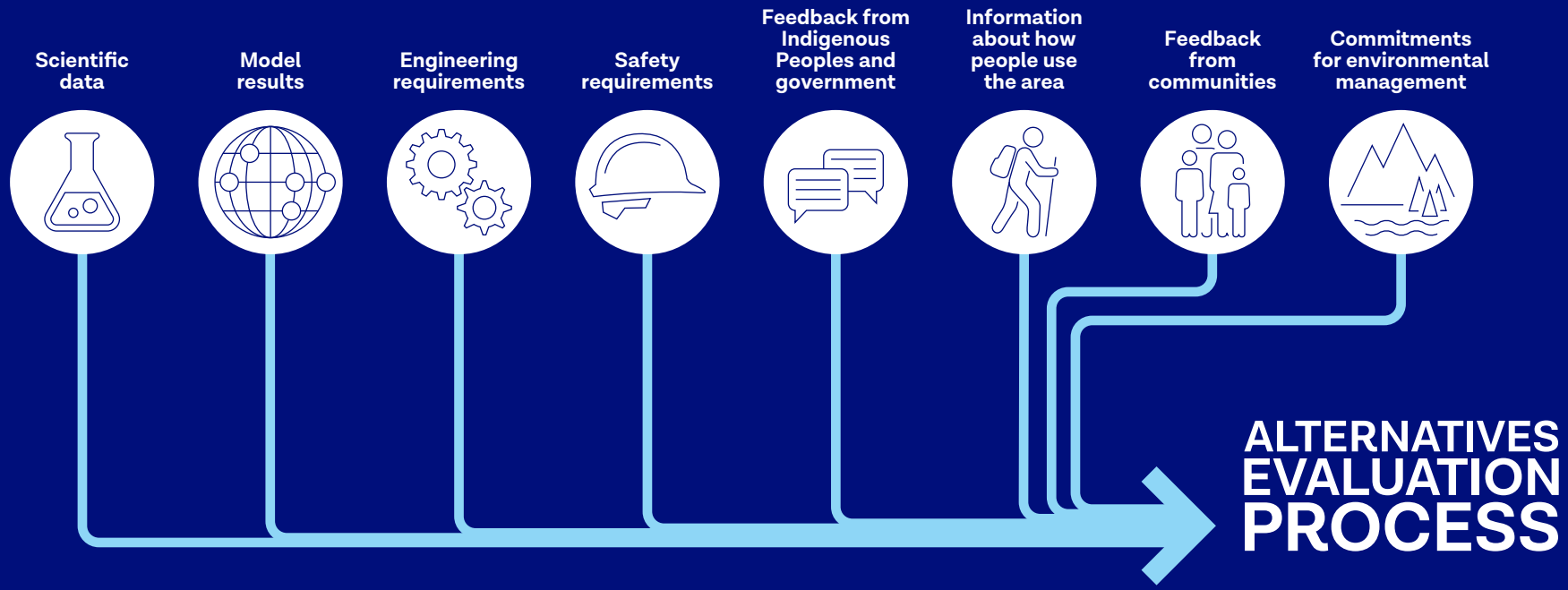
Project Alternatives
Fording River Extension Project

Fording River Extension Project Design Alternatives

The Fording River Extension (FRX) is currently in the design stage. During this stage, Teck is working to define specific aspects of the Project, while making use of the existing facilities and infrastructure at Fording River Operations.

Many of the Project components require further study before the detailed design is completed. Some components are already well defined, including those that will use the existing facilities at Fording River Operations. Other aspects of the Project are still being studied. This includes ongoing hydrological and water quality studies to determine the best way to protect and manage water quality, and engineering programs to establish what design options are possible and achievable. Several other aspects of the Project require community engagement and feedback to understand how people use and value the area. The focus of engagement at this stage is to gather information to help Teck refine the design of the Project.

A variety of factors are considered in the evaluation of alternatives:



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What is confirmed?

Teck has confirmed some aspects of the Fording River Extension (FRX) where feasible alternatives are not available, or if alternatives are found to contradict Teck's commitments to safety and sustainability. These include:

Location

The Project will involve mining in the FRX area only. The possibility of mining on the east end of Turnbull Mountain was considered early on, but rejected by Teck based on feedback on the regional environmental challenges.

Use of Existing Facilities

The Project will make use of existing infrastructure at Teck's Fording River Operations, including connections to regional roads and highways, rail, and electricity supply. Steelmaking coal from FRX will be processed at the Fording River Operations processing plant, and the Project can make use of existing stockpile locations and explosives systems. Existing offices, maintenances shops, warehouses, and other support buildings will also be used. Using the existing facilities and infrastructure helps to minimize the footprint of the Project.

Limited New Facilities

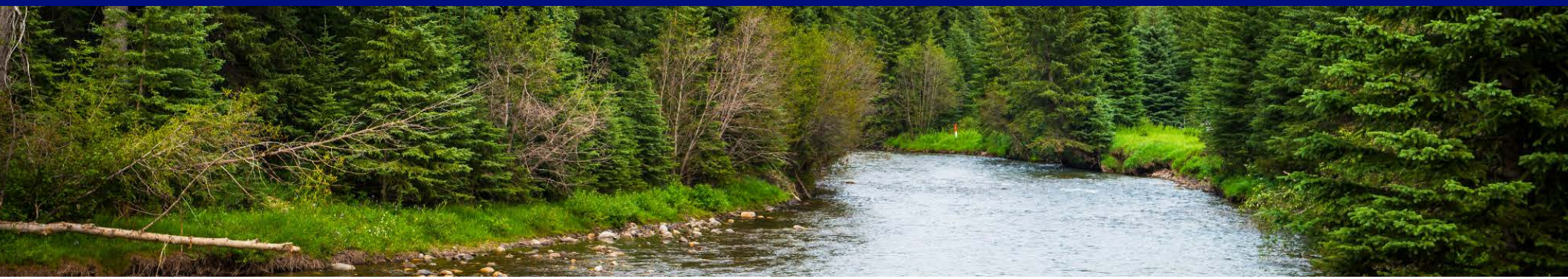
In addition to using existing facilities, there may be a need for new satellite facilities on or near the FRX area. This may include additional support buildings and storage.

Starting Location

As the existing coal processing plant (at Fording River Operations) is at the north end of Castle Mountain, Teck has determined that the best approach will be to start at the north and progress towards the south.

Protection of Chauncey Creek

Teck will include protective measures to ensure water quality is maintained, including avoiding waste rock storage in the Fording River Valley or Chauncey Creek drainage.



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Project schedule and timing

The planned start of pre-construction and the start of mine production is based on the need to supply additional steelmaking coal by the mid-2020s when the Fording River Operations' current steelmaking coal supply will begin to decline in order to maintain the employment and regional economic benefits of the operation.

The duration of mining is not yet defined. Duration will depend on the rate of production, and the amount of mineable steelmaking coal available at the Fording River Extension area. Teck currently plans to maintain the Fording River Operations' current rate of production at 10 million metric tonnes of clean coal per year; however, the volume of mineable steelmaking coal is still being studied. Therefore, Teck will know more about these details as further studies are completed and the design plans for the pit(s) are finalized.

Size and design of the pit(s)

Design of the pit(s) must consider many complex factors, and Teck is still evaluating different options to balance environmental and social factors with operational, safety, and economic considerations.

- Larger pits may support a longer mine life if they allow for more coal to be mined over time.
- Larger pits also allow for creative opportunities to store waste rock as the pit develops. For example, there may be room to store waste rock in one part of the pit while mining in another part.
- Design must also consider geological and geotechnical factors to ensure the pit's size and shape is safe and stable.

As part of the pit size and design, Teck is considering two different mining techniques. Both have advantages and we may choose to use a combination of both options. Information is still being gathered and these options are currently being evaluated.

Open Pit Mining

Open pit mining is typical of Teck's coal mines in the Elk Valley. Mining mostly progresses from the top down through layers of coal and waste rock. Waste rock is taken out of the pit and placed in a different location. This is the most simple and operationally flexible technique.

Along Strike Mining

Along strike mining progresses horizontally along layers of coal and waste rock. Waste rock is moved from one side of the pit to the other. This technique is more complicated but supports more flexible opportunities for progressive reclamation and keeps waste rock within the pit, proving the opportunity to reduce the overall disturbance footprint.

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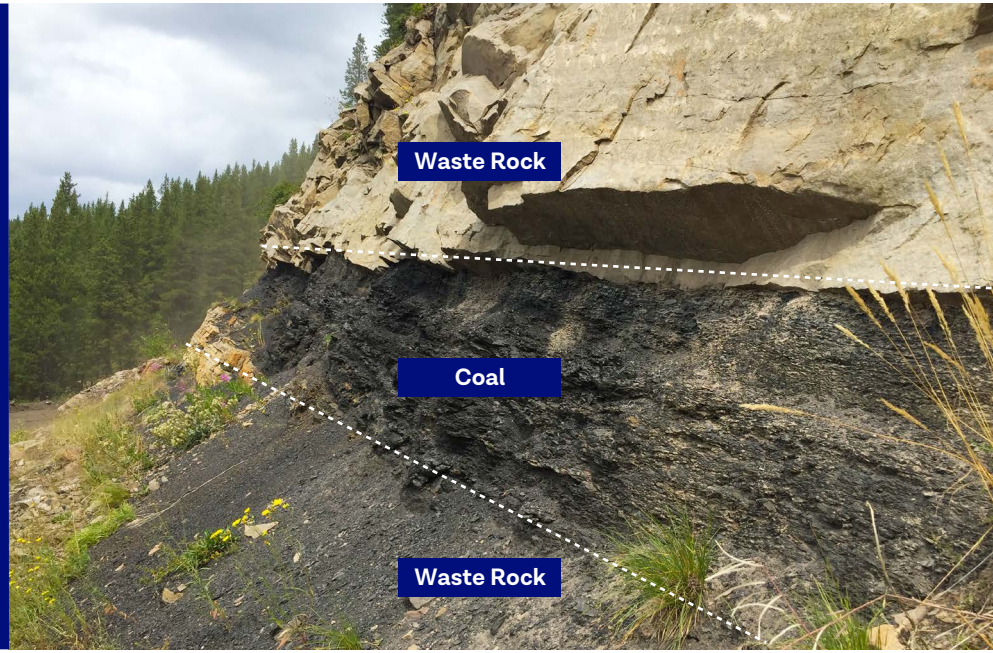
Waste Rock Storage Locations

Waste rock is rock that has to be removed to allow coal to be mined. Detailed design and planning for waste rock storage will occur after the pit design is complete and the mining technique has been determined. Teck's objectives for waste rock storage are to:

- maximize storage of waste rock within mined out pit(s), and
- avoid or minimize disturbance of watersheds that are not directly affected by existing mining activities.

Teck is committed to avoiding the placement of waste rock in the Fording River valley and the Chauncey Creek drainage. Specific locations for waste rock storage are still being considered. We are currently evaluating a combination of three options, as described below.



Option 1

The Kilmarnock Creek drainage runs along the north side of Castle Mountain and contains past and current waste rock storage areas from Fording River Operations. The upper portion of the drainage area has not been directly affected by mining.

- This option would require a low level of new disturbance as long as the unaffected upper portion of the drainage is avoided.
- The location of the Kilmarnock drainage is close to the north end of the Fording River Extension (FRX) Area, so the distance to truck waste rock between the pit and the storage area would be relatively short in the early years of the Project. This has a benefit for fuel consumption and greenhouse gas emissions. However, the distance would increase in later years as the pit develops.

Option 2

Another option is to store waste rock in another pit at Fording River Operations. When mining in the Eagle Pit is complete, Teck could store waste rock from FRX in this pit. This approach is called "backfilling" the pit.

- Backfilling Eagle Pit would require moderate haul distances early in the Project, increasing in later years.
- Water from Eagle Pit would flow to the Kilmarnock Creek drainage.
- This option would not require any additional terrestrial disturbance.

Option 3

The third option is to store, or backfill, waste rock from FRX into the FRX area pit(s). This option provides numerous benefits, but would not be possible until there is sufficient space in the pit.

- Short distances to haul waste rock will benefit fuel consumption and related emissions.
- No additional terrestrial disturbance would be required.

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Tailings Handling

Steelmaking coal from the Fording River Extension (FRX) will be taken to the processing plant at Fording River Operations. Processing will generate fine tailings (a byproduct of processing), and some but not all of these fine tailings could be stored in the existing South Tailings Pond at Fording River Operations.

Teck is looking at options for tailings management at FRX, and will consider input from government agencies, Indigenous groups, and communities. The options under consideration include tailings technologies with different levels of water content.

Tailings Slurry

The Fording River processing plant currently produces a slurry of fine tailings mixed with water. The slurry is approximately 95% water by weight and is transported by pipelines and pumps to the tailings pond.

- Benefits of the tailing slurry are that no additional equipment is needed, and no additional energy would be used to transform the slurry into another form.
- Water from the tailings pond is collected and re-used in the processing plant.

Thickened Tailings

Thickening tailings requires energy and specialized equipment to remove water from the tailings slurry. The thickened tailings have a consistency similar to toothpaste and are transported through large pipelines using specialized pumps.

- More energy is required, compared to the tailings slurry. Energy is needed to remove water, and to transport the tailings.
- Some of the water removed from the tailings would be available for re-use in the processing plant.

Dry Tailings

Nearly all the water can be removed from the fine tailings to store them in a dry form (less than 20% water by weight), with a consistency similar to wet sand. The dry tailings can be transported by truck or conveyor.

- Dry tailings have the highest energy requirements and potentially the largest greenhouse gas emissions.
- Almost all the water would be recovered for re-use in the processing plant.

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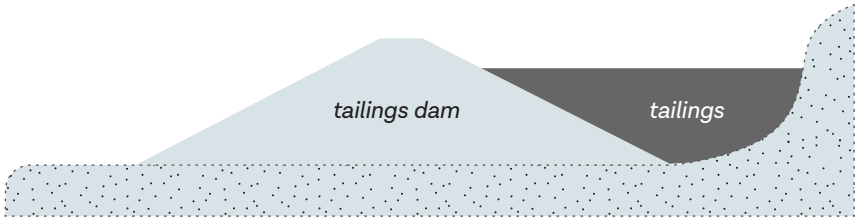
Tailings Storage

Teck is also considering different options for tailings storage. Currently, fine tailings management at Fording River Operations involves tailings slurry stored in a conventional tailings dam. However, conventional tailings dams are not the only option, particularly when dealing with thickened or dry tailings. Tailings can potentially be stored within or outside of the pit(s), and can be stored separately or combined with waste rock.

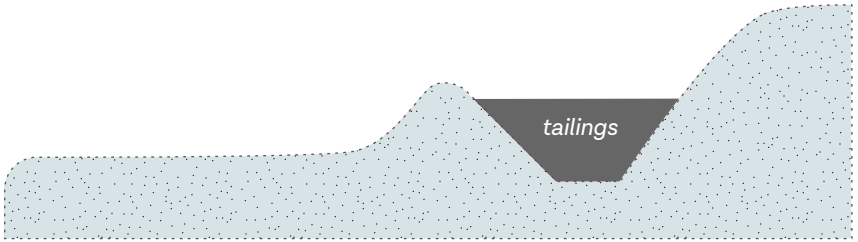
Tailings storage alternatives are described below, and can be combined into different options. Teck will work with mine engineers and designers to ensure that the selected tailings storage is both physically and geochemically stable.

Tailings Dam



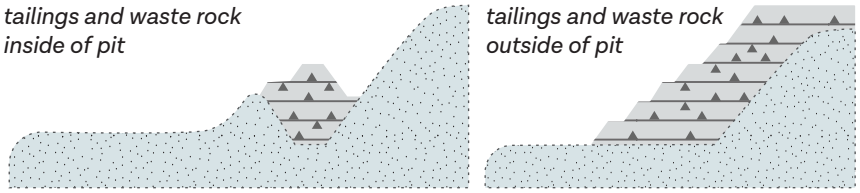
Slurry and thickened tailings can be stored behind a tailings dam. These structures are often used in the mining industry and the risks are well understood. Tailings dams need an appropriate area outside the pit(s) to store tailings.

Storage in Pit



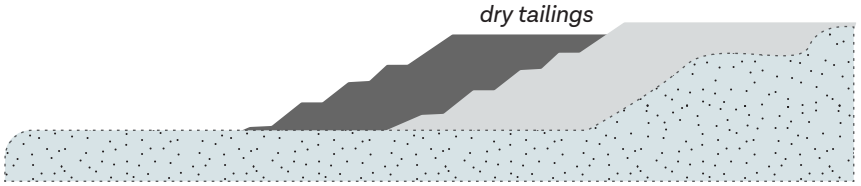
Tailings could also be stored in a pit after mining is complete. Slurry, thickened and dry tailings could be stored in this way. No additional footprint would be required, but use of the pit might reduce space available for other purposes such as water treatment or storage of waste rock.

Storage with Waste Rock



Slurry, thickened and dry tailings could be stored along with waste rock, either inside or outside of the pit. Neither option would require additional footprint, but storage outside the pit would may require additional efforts for water collection and management.

Standalone Dry Tailings Facility



Dry tailings could be placed in a dedicated storage facility outside the pit(s). After mine closure, the dry tailings can be shaped and reclaimed as part of the landscape. Dry tailings storage would likely be located close to the processing plant at Fording River Operations.

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Trucks and Equipment

At the Fording River mine site, Teck uses a variety of vehicles and mobile equipment for mining and to move rock, coal, and other materials around the site. This includes diesel-powered haul trucks, electric shovels, earth-moving equipment (such as bulldozers, excavators, and graders), drilling equipment, and pick-up trucks.

As many of these vehicles and equipment are powered by fossil fuels, these activities generate a large portion of mine emissions. Diesel-powered haul trucks are the conventional trucks used to move coal and waste rock around the site. In order to reduce emissions, Teck is evaluating a number of options for the Fording River Extension (FRX).

Autonomous Haul Truck

Autonomous Haul Trucks

Teck is currently advancing a pilot of **autonomous (self-driving) haul trucks** at its Elkview operation. These vehicles have been shown to improve safety, efficiency and have reduced emissions compared to conventional haul trucks in the mining industry. Planning is needed to incorporate the supporting infrastructure into the mine plan, and to train workers.

Trolley Assist

Trolley Assist would connect diesel-powered haul trucks to an electrical cable system for some segments of the journey. When connected to the cable, the truck would be powered by electricity, reducing the use of diesel fuel and related emissions. This option requires wider haul roads (therefore a larger footprint) to make room for the electrical cables and poles.

Electrically Powered Conveyors

Electrically powered conveyors can move coal and/or waste rock safely and efficiently, although materials need to be crushed to a smaller size before transport. They require additional stockpiles, and are often used in conjunction with haul trucks. Conveyor systems generally have lower emissions than haul trucks alone. Teck is also studying how the smaller size of crushed rocks might affect how the materials interact with the environment, including potential leaching of constituents of concern and/or changes in water flow through stored waste rock.

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