



ICEFIELDS TRAIL (NORTH) CONCEPT

ENVIRONMENTAL IMPACT ANALYSIS PROCESS






Icefields Trail (North)


OUTLINE

- Project Overview
- Detailed Impact Analysis Process
- Background Studies
- Valued Components
- Potential Effects
- Potential Mitigation Measures
- Monitoring
- Next Steps




 **Icefields Trail (North)**

PROJECT OVERVIEW



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3

 Golder Associates

Proposing an approximately 109 km multi-purpose trail from Jasper to Columbia Icefield and the Wilcox Campground.



Icefields Trail (North)

PROJECT OVERVIEW

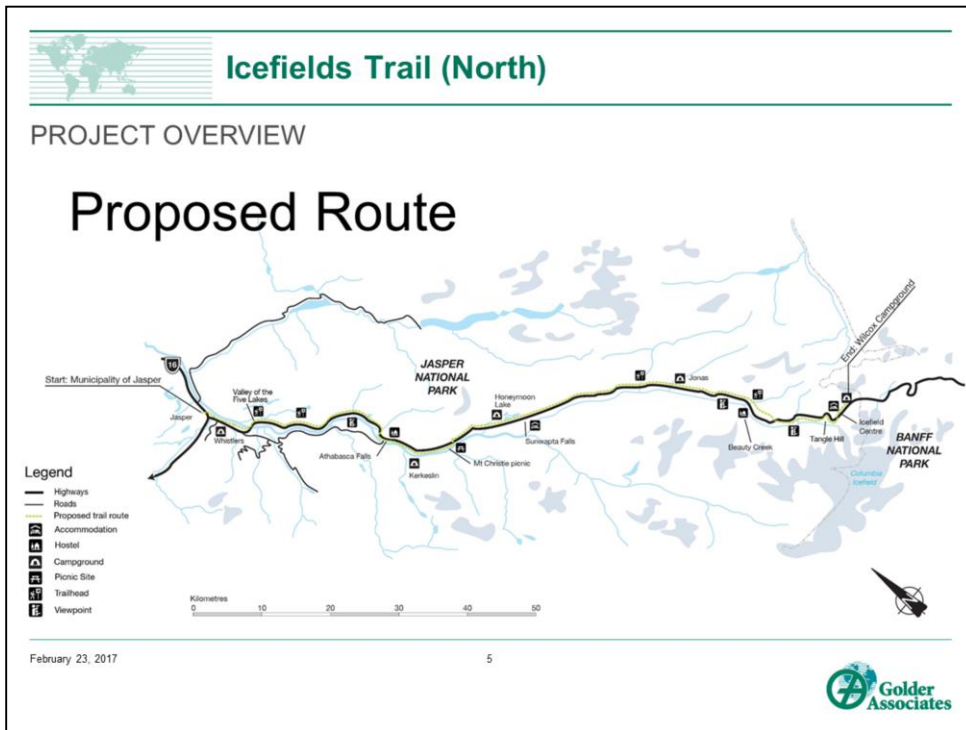


February 23, 2017

4



Icefields Trail (North) is proposed to end at Wilcox Campground.



109 km, Jasper – Wilcox Campground

The trail starts in Jasper and follows Hazel Ave/Hwy 93A to join the Icefields Parkway at Alpine Village

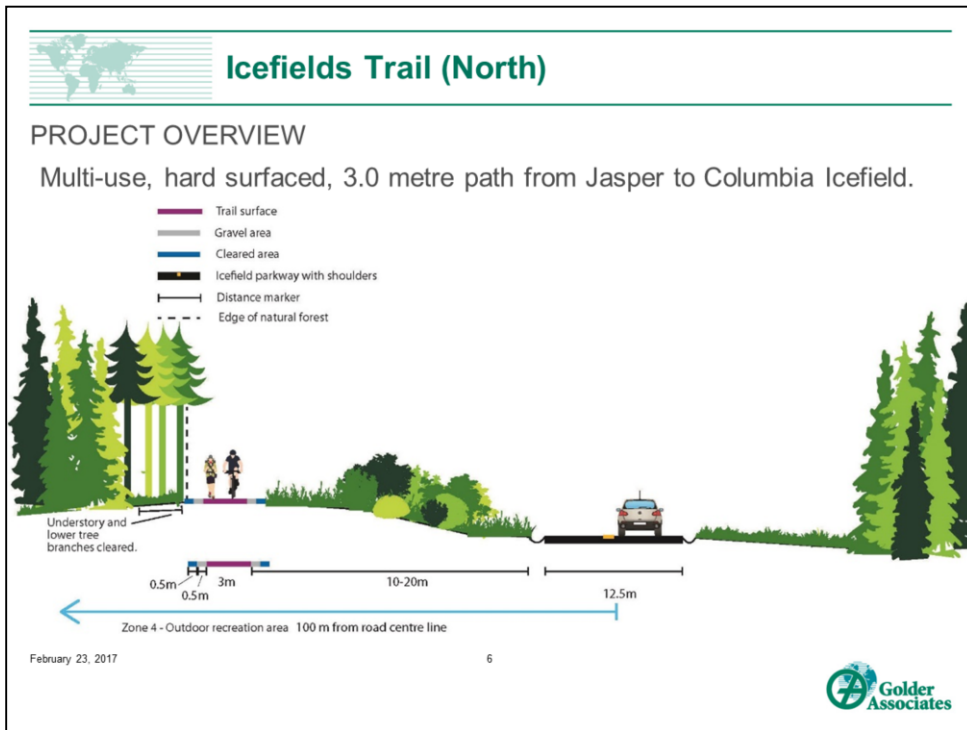
It follows the east side of Icefields Parkway for the majority of the route.

Proposed alignment on west side:

- Athabasca Falls to Mt Christie picnic area
- Tangle Hill

Crossings will be level crossings with appropriate signage and markings.

Level crossings are planned to attractions and accommodations on the opposite side of the road.



Goal: Environmentally-friendly recreational trail that will meet the needs of a range of users, particularly families with children who wish to leave their cars and explore the park.

The trail would provide an opportunity for non-motorized use and appreciation of the park separated from motorized users but within close proximity to the existing highway.

Similar to Legacy Trail in Banff National Park.

Some features:

Build on edge of natural forest

Clear underbrush close to trail to reduce human wildlife conflict

Snow throw zone is 15-20m; building outside this zone may allow for winter use in some areas.

Parks Canada has developed some general design principles for the trail, including respecting the natural environment and cultural resources, for example, by

- use of existing right of way
- avoiding wetlands where possible
- clear spanning creeks



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DETAILED IMPACT ANALYSIS PROCESS



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A detailed impact analysis (DIA) is being conducted, meeting the requirements of CEAA 2012.

GOLDER'S ROLE

- Conduct the DIA with oversight and direction from Parks Canada Agency (PCA)
- Work collaboratively with other project consultants on the alignment routing

7



1. CEAA 2012 requires PCA to ensure that projects on its land do not cause significant adverse environmental effects.

PCA has developed an Impact Assessment Directive that details the requirements for ensuring this obligation is met.

For this project, PCA requires a **detailed impact analysis (DIA)** because of public concern that has been expressed. This is PCA's most comprehensive impact assessment.

2. Golder is conducting the DIA under contract, with direction and oversight from Parks Canada Agency.
3. A key role for Golder in the conduct of the DIA is collaborative work with other consultants on the projects, including Engineers who worked on the proposed alignment.



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DETAILED IMPACT ANALYSIS PROCESS

- Evaluate alternative routes



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8



Parks Canada has outlined requirements for a DIA in *Guide to the Parks Canada Environmental Impact Analysis Process (2015)*

A DIA may require evaluation of alternatives.

For the Icefields Trail (North) concept, PCA, Golder and other consultants have coordinated on how to use initial assessment results and findings to mitigate potential impacts and maximize opportunities. This has allowed for early integration of environmental considerations into proposed alignment alternatives. In keeping with best principles of impact assessment, these 'mitigations by design' are the most effective way to reduce adverse effects and/or to minimize the need for additional ongoing mitigation through the life of the proposed project.



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DETAILED IMPACT
ANALYSIS PROCESS

- Identify Valued Components



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9



Valued components (VCs) are important cultural, economic or environmental components of the landscape that are analysed to determine existing cultural and environmental conditions and predicted future conditions or effects associated with the proposed project. Examples of VCs include: grizzly bear, caribou, white bark pine, mountain goat, archaeological resources, etc.

The DIA can be used to adaptively improve the proposed project based on understanding predicted interactions of the project with VCs.

Icefields Trail (North): Golder identified valued components based on the expertise and experience of their technical experts. Identified valued components were reviewed and approved by PCA subject matter experts.



Icefields Trail (North)

DETAILED IMPACT ANALYSIS PROCESS

- Evaluate the potential effects of the proposed project on Valued Components, including cumulative effects
- Identify potential mitigation measures
- Identify follow-up monitoring



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10



Icefields Trail (North): DIA status – The DIA process is currently at this stage. Golder is drafting the DIA, with input from consultations and input and review from PCA.

Golder collected and is using existing environmental and cultural information to identify and assess potential effects of the proposed project on the valued ecological and cultural indicators.

Golder is identifying ways to mitigate these potential effects of the trail and trail use.

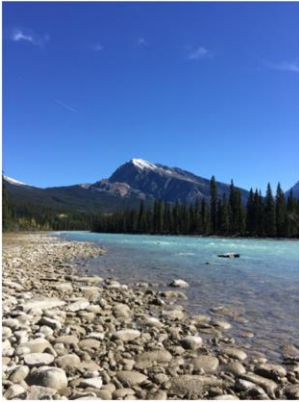
- For example whitebark pine, which is a federally listed as 'Endangered' (SARA, Schedule 1), was identified along the proposed route and the alignment was adjusted so there would be no physical disturbance to individual trees.
- Remote camera data collection and mapping in the area of the Kerkeslin Goat lick was used to identify appropriate alignment routing and other mitigations to minimize effects of the proposed project.

The DIA will identify follow-up monitoring requirements.



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DETAILED IMPACT ANALYSIS PROCESS



- Conduct public and Indigenous consultation and engagement
- Part 1 – Consultations are being conducted on the proposed project concept
- Draft DIA produced with input from Part 1 consultations
- Part 2 – Consultations will review draft DIA
 - Draft detailed impact analysis (including considering consultations) will be available for public and Indigenous review, available both in hard copy and online

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11



Icefields Trail: DIA Status Public and Indigenous Engagement and began on March 1st.

The Public and Indigenous groups will also have an opportunity to comment on the draft DIA when it is available.



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BACKGROUND STUDIES



Biophysical and Cultural studies conducted in 2016 include:

- Archaeology
- Historical Resources
- Rare plants
- Non-native vegetation (i.e. weeds)
- Mountain goat lick monitoring
- Ground squirrel colonies
- Breeding birds
- Desktop review for bat hibernacula
- Desktop wetland mapping exercise

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12



To be able to meet the DIA requirements, Golder researched public data and other information available from Parks Canada regarding environmental and cultural components.

Beginning in the summer of 2016, Golder also conducted the listed biophysical and cultural work to supplement existing information. These studies, plus PCA's existing knowledge, supported early integration of ecological and cultural considerations into alignment alternatives. Many changes to the proposed alignment were made based on the identification of potential impacts (for example: avoiding a goat lick; aligning the trail away from areas of high potential for human-wildlife conflict; avoiding archaeological resources).

A number of iterative alignment routings were made to avoid or minimize impacts to identified wetland.



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BACKGROUND STUDIES

Findings

- Rare plants
- Non-native vegetation
- Mountain goat monitoring
- Kerkeslin mountain goat lick mapping
- 6 ground squirrel colonies
- 29 songbird species recorded during Breeding Bird Surveys
- 58 bird species recorded incidentally, including barn swallow, a federally-listed SAR
- 84 archaeological sites investigated



February 23, 2017

13



Rare plants found within the immediate vicinity of the proposed alignment include whitebark pine (“endangered” – SARA, Schedule I), western false-asphodel and Alaska bog orchid.

Several populations of **non-native vegetation** were found in the immediate vicinity of the proposed trail including bull thistle, common tansy, and spotted knapweed, yellow hawkweed which are considered to be a high priority for management control within Jasper National Park.

Mountain goats are known to regularly use a mineral lick near the Athabasca River and the highway near Kerkeslin Creek. This lick was exposed when the highway was built through a roadway cut into the slope. The daily and seasonal use of this lick by goats was monitored through remote cameras to gather information on when bikers may disturb goats coming to use the lick.

Ground squirrel colony surveys and breeding bird (migratory songbirds) surveys were completed along the alignment. Six ground squirrel colonies in the immediate vicinity of the proposed trail were

found but they are widely distributed and colonies were not very dense.

29 songbird species were recorded during the bird breeding season.

58 bird species were recorded incidentally, including 8 provincially-listed (barn swallow, Brewer's sparrow, brown creeper, Clark's nutcracker, osprey, pileated woodpecker, prairie falcon, western wood-pewee) and one federally-listed (barn swallow) Species at Risk.

Of the **84 archaeological sites** investigated during Archaeological Impact Assessment (AIA), 13 were pre-contact, and 71 were historic. The AIA conducted in support of the proposed project has found 9 new pre-contact sites along the project alignment, and revisited 4 previously known sites along the project alignment.



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VALUED COMPONENTS



- Wildlife - 9 species and species groups
- Vegetation - 6 species groups and communities
- Aquatics - 5 parameters
- Soils and Terrain - 2 parameters
- Cultural resources - 3 types
- Air - 2 components
- Noise – 2 components
- Visitor Use – 3 components

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14



Subsequent to the field and desktop studies, valued components were identified, reviewed and approved by PCA subject matter experts. VC's of primary and secondary focus were identified. The DIA will focus on both primary and secondary VC's. This presentation will review some of the primary VC's.

VCs identified for the DIA include:

WILDLIFE

western toad

migratory songbirds

olive-sided flycatcher

common nighthawk

small mammals

little brown/northern myotis

black bear and grizzly bear

woodland caribou (southern mountain)

mountain goat

VEGETATION

Federally listed plant species
Provincial listed species
Wetland and Riparian communities
Old growth forest
Listed ecological communities

AQUATICS

Fish and Fish Habitat - Loss or disturbance of fish habitat
Fish and Fish Habitat - Increased sediment deposition
Water Quality - Increased in sediment load and deposition
Water Quality - Introduction of Deleterious Substances
Hydrology - Changes in flow patterns and quantity, and vertical and lateral stability of watercourses

AIR

Criteria Air Compounds,
Greenhouse Gases,

NOISE

Noise (assuming blasting is not required):

Increased ambient noise levels resulting from noise emissions during project construction and maintenance can result in effects to humans and wildlife

Noise and Vibration (assuming blasting is required):

Increased ambient noise levels resulting from noise emissions during project construction and maintenance can result in effects to humans and wildlife;

Ground vibration and airborne noise resulting from blasting during project construction (if required) can result in effects to humans and wildlife.

VISITOR USE

Visitation
Visitor Experience

Contaminated Sites
Anthropogenic Disturbance

SOILS AND TERRAIN

Soil – quality, quantity, distribution
Terrain as expressed by landform distribution

CULTURAL RESOURCES

Cultural areas of significance
Cultural landscape
Archaeology



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VALUED COMPONENTS

Wildlife

Jasper National Park is home to about 347 species of wildlife, including:

- 59 mammals,
- 281 species of birds,
- 2 reptile, and
- 5 amphibian species



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15



Jasper National Park is home to approximately 347 species of wildlife including 59 mammals, 281 species of birds, two reptile and five amphibian species (Holroyd and Van Tighem 1983b, PCA 2013). Wildlife habitat along the Hwy 93N corridor is varied spanning both the Montane and Subalpine ecoregions.



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VALUED COMPONENTS

Wildlife

Federally listed **species at risk** include:

- woodland caribou (Threatened)
- common nighthawk (Threatened)
- olive-sided flycatcher (Threatened)
- little brown myotis bat (Endangered)
- northern myotis bat (Endangered)
- western toad (Special Concern)

Other iconic species include grizzly bear, wolves, cougars, elk, bighorn sheep, and mountain goat.





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VALUED COMPONENTS

Vegetation

- High concentrations of rare plants were identified along some areas of the proposed alignment.
- Federally listed **species at risk**:
 - Whitebark pine (Endangered)



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17



Picture of whitebark pine – federally listed as ‘Endangered’ (SARA)
(credit: Kailli Pigott, Golder Associates Ltd.)

During 2016 surveys, 155 rare plant occurrence locations were documented for 13 rare plant species.

Rare plants identified during field surveys include:

Vascular Plants

Low braya

Blackened sedge

Yellow sedge

Whitebark pine (Endangered)

Alaska bog orchid

Western false asphodel

Lichens

Wand lichen

Split-peg lichen

Pea-green shield lichen

Flaky freckle pelt lichen

Bryophytes

Liverwort

Moss (*Didymodon asperifolius*)

Moss (*Mnium blyttii*)



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VALUED COMPONENTS

Vegetation

- Non-native plant species are especially abundant along roadways and near human disturbances



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18



Picture is of Ox-eyed daisy – noxious weed

Several populations of **non-native vegetation** (also sometimes referred to as 'invasive species') were found in the immediate vicinity of the proposed trail including bull thistle, common tansy, and spotted knapweed, yellow hawkweed which are considered to be a high priority for management control within Jasper National Park.



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VALUED COMPONENTS

Aquatics

- The upper Athabasca River within JNP is known to support 16 fish species, including bull trout and rainbow trout (Athabasca River population)

- **COSEWIC species**

- bull trout – Special Concern
- Rainbow trout (Athabasca River Population) – Endangered



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19



COSEWIC: Committee on the Status of Endangered Wildlife in Canada

Common name of fish species

Longnose Sucker

White Sucker

Spoonhead Sculpin

Flathead Chub

Lake Chub

Longnose Dace

Spottail Shiner

Northern Pike

Burbot

Trout-Perch

Brook Trout

Bull Trout (recommended as 'Special Concern' by COSEWIC)

Lake Whitefish

Mountain Whitefish

Pygmy Whitefish

Rainbow Trout (Athabasca River Population) – (recommended as
'Endangered' by COSEWIC)

Rainbow Trout



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VALUED COMPONENTS

Cultural Resources

- 84 archaeological sites investigated in an Archaeological Impact Assessment
- 13 pre-contact sites (4 previously known)
- 71 historical sites



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20



The majority of the identified archaeological sites along the proposed project alignment are historic and relate to the **construction and** utilization of the area as a transportation and tourism corridor. Of the 84 archaeological sites investigated during Archaeological Impact Assessment (AIA), 13 were pre-contact, and 71 were historic. The AIA conducted has found 9 new pre-contact sites along the proposed project alignment and revisited 4 previously known sites along the proposed project alignment. The identified pre-contact sites included campsites and flint knapping workshops for the production and maintenance of stone tools. Pre-contact sites are generally subsurface and as a result more difficult to identify when compared to historic sites.

This information was used in proposed alignment planning to avoid most recorded archaeological sites.

High potential sites may need further investigation when the final alignment is determined to ensure resources are identified and avoided where possible.



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POTENTIAL EFFECTS

Potential effects to Valued Components are currently being identified and assessed in the DIA and may include:

- Human – wildlife conflict
- Habitat loss
- Disruption to wildlife, including species at risk
- Effects to fish or fish habitat
- Effects to wetlands
- Effects to archaeological resources
- Introduction of non-native plants



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21



The DIA will identify potential effects of the proposed project to the Valued Components.

This list of potential effects is not exhaustive. The DIA will include a comprehensive consideration of effects of the proposed project.

The DIA will also consider cumulative effects of the proposed project.



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POTENTIAL MITIGATION MEASURES

Planning and Design

- Avoid sensitive habitats and rare plants
- Avoid archaeological sites
- Avoid high-use wildlife areas
- Trail design to control speed
- Incorporate clear-span bridges
- Minimize in-stream work and infrastructure



February 23, 2017

22



This list of mitigation measures is not exhaustive. The DIA will include a comprehensive consideration of mitigations measures for the proposed project.

The DIA will identify mitigation measures throughout planning, construction, and operations.

For example, the proposed trail is being routed to minimize impacts by using existing disturbed areas such as old roadways, avoiding wetlands where possible and staying in close proximity to the existing highway.



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POTENTIAL MITIGATION MEASURES

Construction

- Construction timing windows to avoid sensitive mating/breeding/nesting periods
- Avoid spawning sites
- Minimize vegetation disturbance
- Avoid introduction of non-native plants
- Minimize noise by restricting construction hours
- Site rehabilitation





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POTENTIAL MITIGATION MEASURES

Operation

- Education and signage
- Seasonal or adaptive management closures
- Implement speed limits
- Ongoing vegetation management to maintain sightlines
- Implement invasive weed control measures





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MONITORING



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25



The DIA will also identify monitoring requirements during and after construction. Monitoring of environmental components can be conducted for a variety of purposes:

- To verify that mitigations are implemented
- To verify if prediction of impacts is correct
- To determine effectiveness of mitigation, and whether adaptive strategies need to be put in place.

Monitoring includes potential field studies such as wildlife cameras, vegetation and weed surveys, analysis of wildlife conflict data, visitor use statistics, etc.



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NEXT STEPS

Item	Dates
Part 1: Public/Indigenous consultation - Input for drafting DIA	March 1 – April 24, 2017
Drafting DIA for Part 2 of consultations – Incorporate Part 1 comments	May – July, 2017
Part 2: Public/Indigenous consultation – review draft DIA - Draft Detailed Impact Analysis (including considering consultations) available for public and Indigenous review, available both in hard copy and online	mid July – mid August 2017
Decision on Detailed Impact Analysis	September 2017

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26



Dates are flexible - subject to timing needs for Indigenous and public consultation.



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All feedback is welcome.



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27

