# STATEMENT OF WORK

# Report on Visitor Use Patterns at Lake Minnewanka Area

## 1. Introduction

Parks Canada (PCA) is requesting a report on visitor use patterns at Lake Minnewanka Area (LMA) to inform the area planning process that is currently underway for this popular visitor destination in Banff National Park.

This report is intended to be a thorough analysis and summary of visitor use patterns. The report will also include identification of key visitor use challenges with a clearly outlined options analysis of potential solutions, along with constraints. The report will help inform visitor use management within the area in the short-term and long-term.

## 2. Background

As a commitment under the 2022 Banff National Park of Canada Management Plan, PCA is undertaking a process to develop an area plan for the LMA which will provide specific management direction for years to come. Key input required for the development of the area plan includes a detailed description and analysis of patterns (e.g., spread, intensity, range, temporality) and types of visitor use, as well as physical availability of infrastructure and day use areas (DUAs). A large variety of visitor use data has been collected by PCA in recent years, especially in recent months, but a statistically valid and fulsome assessment of visitor use pattens and types of use are needed to support the area planning process for the LMA (Figure 1).

The LMA area comprises of an interconnected network of locations visited by the public throughout the year and accessed by a variety of modes for movement. This network includes: six DUAs, two front country campgrounds, six backcountry campgrounds, several boat launches, a dive area, a variety of trails, numerous points of interest, and a commercial boat tour and rental operation with an associated snack shop. During the summer months many of these locations are at capacity which then results in a wide variety of challenges. Annual visitation is currently estimated to be one million, with an observed 50% increase in visitation over the last decade and demand expected to continue to grow. Having an increased understanding of current and future predicted visitor use is needed to effectively manage the LMA in a way that preserves ecological integrity while also maintaining quality visitor experiences and public safety. We aim to better understand how visitors are arriving, experiencing, and moving throughout each DUA and the whole LMA. Furthermore, we aim to understand what key visitor use challenges exist and the recommended solutions for addressing them. This report will be used to inform planning strategies and objectives for area planning including visitor use management and associated infrastructure required to support safe and sustainable visitation.
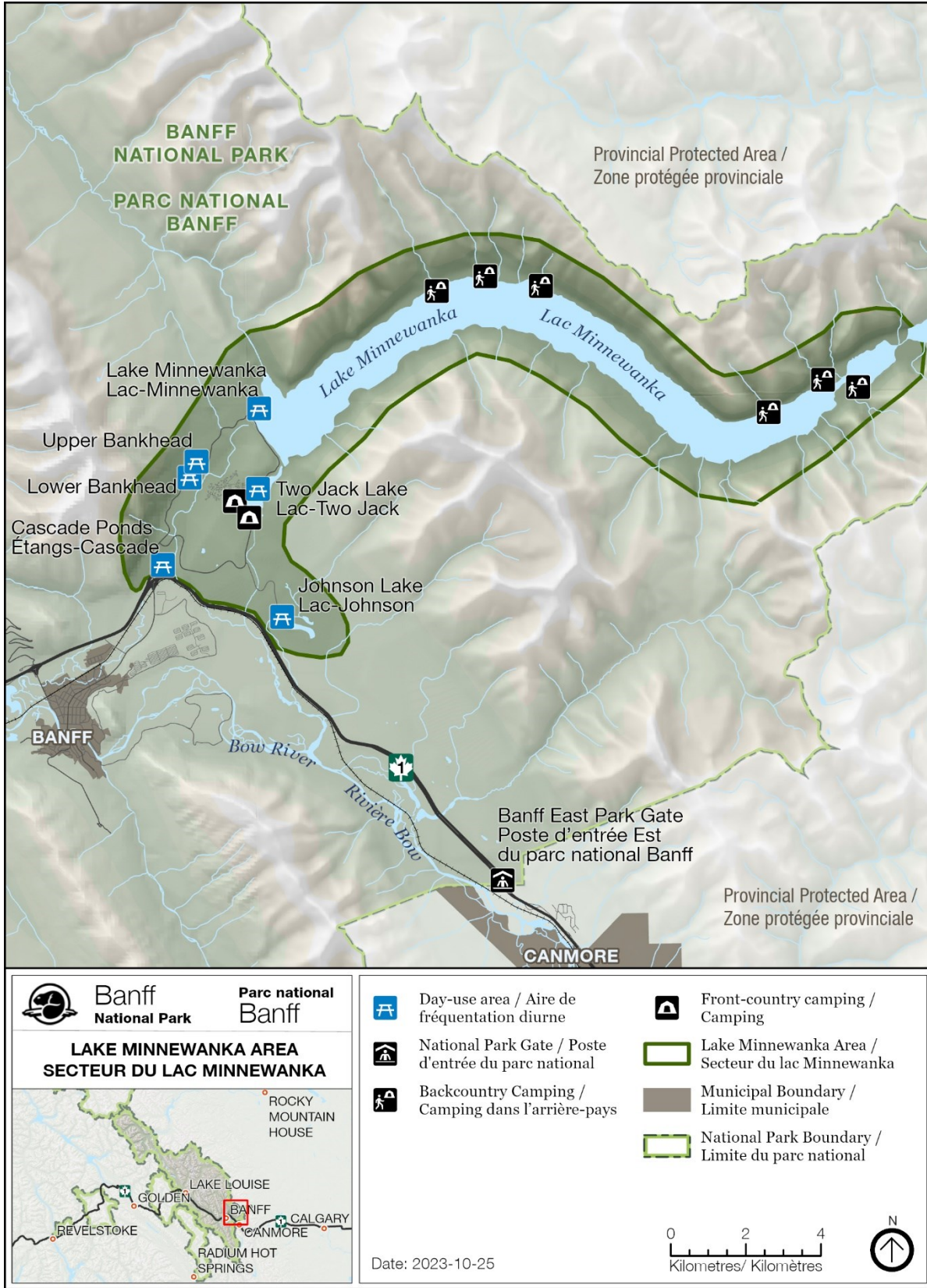
Figure 1. Lake Minnewanka Area overview.

**3. Scope of Work**

**Report on Visitor Use Patterns at Lake Minnewanka Area**

Provide a final report that analyzes and summarizes the data provided by PCA and sourced elsewhere. The report should clearly present findings and recommendations with text and visually with figures, tables, and maps.

The scope of work is divided into two parts:

- **Part A** is an in-depth analysis and summary of data provided by PCA (Appendix 1) and sourced elsewhere, identification of key visitor use challenges, and estimates of physical availability for each DUA and the LMA overall.
- **Part B** builds upon the results of Part A. It is an options analysis of potential solutions to address the identified key visitor use challenges along with final recommendations. Constraints as well as existing successes will be highlighted.

*Temporal Reference:* The scope of work requires consideration of two temporal references for both Part A and Part B. Time 1 will report on the present time (current baseline) using information collected in recent years. Time 2 will assume that demand for visitation will continue to increase at the same rate over the coming decade (projected baseline) with a projected annual visitation of 1,500,000 by the year 2033.

*Geographic Reference:* The scope of work requires consideration of two geographical references for both Part A and Part B. The first will report on and articulate results for the whole of LMA (Figure) and the second will report on results for each DUA (Appendix 2).

**Report Part A: Analysis & Summary of Existing Data**

*I: Detailed Analysis of Visitor Use Patterns*

- Complete detailed analyses of existing data in Appendix 1 and other acquired data using appropriately defined methodologies (quantitative, qualitative, mixed).
- Methodologies should include at minimum relevant inferential (comparison, correlation, difference, similarities) and descriptive statistical analyses.
- Analyses should be aimed at providing reliable and where possible, statistically valid, results for an in-depth understanding of types and patterns of visitor uses for LMA as a whole and each DUA.
  - Analysis should be performed for individual variables (attributes/data types) and as applicable (useful) across multiple variables.
  - Analysis should identify trends and changes over-time for key visitor use attributes and patterns.
  - Explanatory notes and limitations should be provided through-out.

*II: Estimates of Physical Availability*

- Based on existing data, define and calculate the physical availability for each DUA and the whole LMA.
- Physical availability defines what space is available to support visitor activities at various densities/volumes of visitation at any one time. This may include for example, a range of

maximum number and types of visitors that an area can sustain while maintaining the desired resource conditions and visitor experiences of the area:
   a. Visitors are not unexpectedly turned away from the LMA or any DUA.
   b. Visitor use does not cause further environmental degradation.
   c. Biodiversity, cultural and historic values, and viewscape are maintained.
   d. Built infrastructure can safely accommodate visitor use.
- Further information and context will be provided to the successful contractor.

*III: Summary of Visitor Use Patterns*

- Based on analyses, define and summarize the types of visitors uses and patterns for the LMA and DUAs. Descriptions should include but are not limited to:
   a. Movement and flow of visitors throughout the area, spread, gathering nodes, congestion points, intensity of use, temporality/seasonality, popular activities, destinations, and other visitor attributes that represent the patterns and types of visitors use within the LMA and DUAs.
   b. The above is inclusive of different types of visitors (day-use and overnight-use), origin (international, regional, national, local resident), and different modes of movement/transport such as vehicular, pedestrians, cyclists, and transit (commercial and public).
   c. Visitor use patterns should be described based on the key components of the visitor experience cycle (i.e., arrival, on-site, departure).
- Provide supporting summary tables and figures. Must include but is not limited to the following:
   a. Visitor flow using vehicles (annual, seasonal, monthly, weekly, daily) which includes both private vehicles and public transport.
   b. Visitor flow outside of vehicles (annual, seasonal, monthly, weekly, daily) which includes different modes of movement as well as trail counter data, DUA snapshot data, DUA video footage, and watercraft usage from existing data, etc.
   c. Parking lot use (annual, seasonal, monthly, weekly, daily, turnover) which includes reference to existing parking lot counter datasets and DUA snapshot data, etc.
   d. Camping (monthly, weekly, daily,) which includes front country and backcountry camping, also allows day and overnight use comparison.
   e. Day use visitation (monthly, weekly, daily) for LMA overall and estimated for each DUA, and where applicable, by activity, trail, etc.
- Provide supporting visual references. Must include but is not limited to:
   a. Visualization of visitor use patterns overall for the LMA and each DUA.
   b. Presented spatially, and graphically with key findings clearly represented.
   c. Maps of an appropriate size and scale are used to support key visualization results.

*IV: Key Visitor Use Challenges*

- Based on the results of analysis, identify, and describe key visitor use challenges for the LMA and each DUA. Challenges should include notable patterns of interest, gaps, trends, and other relevant results.
   a. Examples of known challenges include parking congestion at peak visitation times, traffic back-ups, parking lot roving for spaces, parking illegally on

roadsides, human wildlife conflicts, erosion of heavily used areas, washroom capacity, expansion of day-use activities beyond day-use area, challenges with biking and walking between DUAs, and large group demand in some areas.

- The severity of challenges requires description and quantification to determine potential solutions (Part B). For example, in describing challenges consider:
  a. Built infrastructure (e.g., roads, parking lots, washrooms, etc.) associated with the challenge.
  b. Current and projected visitor demand associated with the challenge.
  c. Vehicle and pedestrian movement related to the challenge.
  d. Potential visitor experience, safety, or other risks of the challenge.
  e. Possible contributions of external factors to the challenge (e.g., demographic changes, population growth, influence of social media information online etc.).

## Report Part B: Options Analysis & Recommendations

*I: Options Analysis of Key Visitor Use Challenges*

- Provide an options analysis that identifies and assesses potential solutions to address the key visitor use challenges identified in Part A.
- Options should provide potential solutions for achieving sustainable visitor use patterns at each DUA and the whole LMA. This includes but is not limited to options to improve traffic flow and visitor movement/use at each DUA and the whole LMA, while also highlighting existing successes. At minimum, provide the following:
  a. <u>Visitor Movement Flow Outside of Vehicles</u>: Improvements that address congestion points, flow, spread, gathering nodes, erosion in heavy-use areas, linking of DUAs, and other patterns or challenges identified in Part A, including anticipated increased demand for visitation in the future.
  b. <u>Visitor Movement Flow Using Vehicles</u>. Options for alternate modes of transport, ways to improve the flow of traffic, options to address any parking issues identified, and any other patterns of interest identified in Part A, including anticipated increased demand for visitation in the future.
- Options analysis should consider, but are not limited to, the below parameters:
  a. <u>Developed Footprint:</u> Options presented do not result in/rely on increases to the existing overall developed footprint of the LMA. Therefore, it is possible that proposed solutions might include re-designing or re-purposing existing developed areas, and/or reclaiming existing developed areas as part of long-term solutions to addressing visitor use challenges.
  b. <u>Operations:</u> Options presented should consider the operational context of the LMA. Where possible, identify implications/interactions with operations. Apply the principle of operational feasibility.
  c. <u>Technology:</u> The options presented should consider the role of technology. This may include solutions that incorporate real-time data collection, improved cell phone coverage, reservation systems, online applications, timed systems (e.g., entry, automatic locking/closures), live feeds/updates, and other technological systems that may support solutions to key visitor use challenges.
  d. <u>Physical Availability</u>: The options presented should be aimed at helping to manage visitor use challenges at peak times within the estimated physical availability of each DUA and LMA.

e. <u>Constraints:</u> Options presented should consider potential constraints.
f. <u>Timeframe:</u> Options presented should include consideration of short-term and longer-term solutions and apply the principle of reasonability.

*II: Recommendations*

- Provide recommendations that outline a unified and clear approach to addressing key visitor use challenges for LMA overall and for each DUA.
    a. Explain how recommendations reach will improve visitor use patterns (and desired outcomes) for the LMA overall and each DUA.
    b. Include associated indicators that should be monitored to help with achieving the recommended approach. Where applicable, provide priorities/phasing.

## 4. Deliverables

The Contractor is responsible for providing the following deliverables:

Deliverable 1: Meetings, monthly progress updates and presentation of draft report. In addition to the report and associated items, the Contractor is responsible for organizing, attending, and providing:

- <u>Virtual Project Kick-off Meeting:</u> Within one month of the start of contract a virtual project kick-off meeting will be held.
- <u>In Person Site Visit:</u> Within one month of the start of contract a one-day site visit by at least one project team member will be held at the Lake Minnewanka Area.
- <u>Monthly Progress Updates:</u> Three monthly progress update meetings with a follow-up email summarizing progress, questions, and concerns. Half-hour minimum.
    o Dates and time allotted for each meeting to be proposed by Contractor.
- <u>Presentation:</u> PowerPoint presentation delivered virtually to Parks Canada. One-hour.
    o Present key findings (final report) with opportunity for questions and answers.

Deliverable 2: A final *Report on Visitor Use Patterns at Lake Minnewanka Area* that includes the following (inclusive of Parts A and B):

- <u>Report Structure</u>. The report structure will include at minimum:
    o Executive Summary, Introduction, Background, Objectives, Methodology, Results, and Discussion.
    o The methodology will outline the rationale for any data transformations, analytics, and statistics performed on the datasets.
- <u>Sharing of Purchased or Acquired Data.</u> A list of all data that was purchased or otherwise acquired for this project shall be provided in a summary table and associated datasets will be packaged appropriately and provided to Parks Canada.
    o This does not include data with licensing restrictions or intermediate processing datasets and analysis generated from the original datasets as part of producing final visualizations or summaries.
- <u>File Format.</u> The draft report and final report shall be provided to Parks Canada in English and in.doc or .pdf format.
    o Associated tabular and statistical outputs will also be available in one summary Excel (.xlxs) workbook.

- o Any supporting spatial data will be provided in an ESRI geodatabase or shapefile format with a defined projection (NAD83 UTM Zone 11).
    - o All final maps will be made available in .pdf format.
- Draft Report Review: A draft report, with accompanying maps, will be presented to Parks Canada for review and comment before completion of the final report.
    - o Please allow two (2) weeks for review.

## 4. Schedule

The schedule for delivery of products will be as follows:

- December – Virtual Start-Up Meeting - Prior to commencing any work.
- December – In person site visit for one day.
- Monthly Progress Updates – Three update meetings as proposed by contractor.
- March 8, 2024 – Draft report submitted to Parks Canada.
- Week of March 11-15, 2024 – Virtual Presentation - date to be confirmed.
- March 22, 2024 – Parks Canada provides comments on the draft report.
- March 29, 2024 – Final Report on Visitor Use Patterns at Lake Minnewanka Area.

**APPENDIX 1**

**REFERENCE DATA AND DOCUMENTS TO BE PROVIDED**

Table 1. This table lists all the data that will be provide by PCA for use during the project. The only exceptions being access to relevant social media related datasets that can often be obtained for free online by following applicable licensing restrictions.

| Type | Location | Method | Duration | Format | Description |
|---|---|---|---|---|---|
| Vehicle Counter | At 1 location, start of LMA Loop Road, 400 m from TCH | Permanent inductive loop in pavement | Since 2006 | Excel Table (.xlsx) and associated location (lat/long) | General traffic volume for the whole LMA. |
| Vehicle Counter | At 4 locations along LMA Loop Road | Temporary magnetic counter adjacent to road | Since May 2023 | Excel Table (.xlsx) and associated location (lat/long), includes hourly data. | Traffic volume within the LMA along the Loop Road. Includes hourly data that can be rolled up as desired. Counts have been calibrated with a roadside count to calculate a correction factor. |
| Vehicle Counter | Cascade Day Use Area, access road | Permanent inductive loop in pavement | Since August 2022 | Excel Table (.xlsx) and associated location (lat/long), includes hourly data. | Specific day use area parking. |
| Vehicle Counter | Lake Minnewanka Day Use Area, access road | Permanent inductive loop in pavement | Since July 2023 | Excel Table (.xlsx) and associated location (lat/long), includes hourly data. | Specific day use area parking. |
| Vehicle Counter | Counters are located at the Lake Minnewanka washroom building and the Two Jack Lake parking lot. | Temporary, BlueToad Bluetooth counter | Since August 2022 | Excel Table (.xlsx) and associated location (lat/long) includes hourly data. | Captures movement patterns of approximately 3% of vehicles. Counters record dwell time and direction of travel along the Lake Minnewanka loop and other key locations in BNP. |
| Camping Front Country | For the 2 camping areas in LMA | Parks Canada Reservation System | 2013 to 2023 | Excel Table (.xlsx) and associated location (lat/long), overnight count. | Includes overnight stays with user nights. |
| Camping Backcountry | For the 6 camping areas in LMA | Parks Canada Reservation System | 2013 to 2023 | Excel Table (.xlsx) and associated location (lat/long), overnight count. | Includes overnight stays with user nights. |
| Front Country Trail Counter | At 9 locations which include all the main | Temporary infrared counter | Since May 2023 | Excel Table (.xlsx) and associated location | Counts all trail users that pass by. Counts have been calibrated with a remote camera to calculate a |

|  |  |  |  |  |  |
|---|---|---|---|---|---|
|  | official trails in the LMA | adjacent to trail |  | (lat/long), includes hourly data. | correction factor to increase accuracy. |
| Backcountry Trail Counter | At 6 locations near backcountry camping areas | Temporary, remote camera counter | 2013, 2015, 2019 | Excel Table (.xlsx) and associated location (lat/long), includes daily data. | Counts all trail users, both human and wildlife, that pass by. Images are further classified by user type and wildlife type. |
| Day Use Area Parking Snapshot | At each of the 6 DUAs | Temporary, staff member in non-marked clothing | September 2023, at each of the 6 DUA: one day during the week, one day during the weekend | Excel Table (.xlsx) | Collected data on vehicle dwell time and occupancy. Includes parking arrival time, departure time, and occupancy for a sample of vehicles over 6 hrs. |
| Day Use Area Types of Use Snapshot | At each of the 6 DUAs, | Temporary, staff member in non-marked clothing | September 2023, at each of the 6 DUA: one day during the week, one day during the weekend | Excel Table (.xlsx) and Photos (.jpg) | Collected data on visitor types, people counts, vehicle counts, and qualitative observations. Includes data collected during a survey transect through the high use area of the DUA at least 6 times per day. |
| Day Use Area Video Footage | At each of the 6 DUAs | Temporary, staff member in non-marked clothing | September 2023, at each of the 6 DUA: at least one day during the week, one day during the weekend | Video (MP4) | Video camera footage during daylight hours of busiest pedestrian area, on weekday and weekend |
| Self Certification for Aquatic Invasive Species | At each of the main watercraft launch locations | Metal drop box for self certification | 2022 - 2023 | Excel Table (.xlsx), day data | Database information includes daily summary. |
| Roam Transit Ridership | Daily numbers by route | Based on ticked sales | 2019 to 2022 | Excel Table (.xlsx), day count |  |
| Recorded Front Country Incidents | Point location captured by staff member who responds to the incident. | Location entered in an online database | 2010 to 2023 | Excel Table (.xlsx) and associated location (lat/long) | Also known as Incident and Event Management (IEM) |
| Social Media | Strava open facing heat maps online: all activities, biking, pedestrian, water, snow | User generated | Current open online content is typically the synthesis of user input from several years | heatmap | Must follow applicable licensing restrictions. |
| Social Media | All Trails, open facing trail reviews and rating level | User generated | Current open online content is typically the synthesis of user input | Reviews and ratings | Must follow applicable licensing restrictions. |

| | | | from several years | | |
|---|---|---|---|---|---|
| Social Media | Trailforks, open facing trail reviews and rating level | User generated | Current open online content is typically the synthesis of user input from several years | heatmap | Must follow applicable licensing restrictions. |
| Parks Canada GIS Base Data | All Open Data for Banff National Park that intersects the project area, including the built infrastructure | For use in GIS software such as QGIS or ESRI software | All current datasets | ESRI Geodatabase | Will include for the LMA for example: roads, day use area, facilities, vegetation cover, waterbodies, restrooms, garbage containers, etc. |
| Banff National Park Visitor Information Program Data | For all of Banff National Park | Survey questionnaire results | 2018 | Excel Table (.xlsx) | Parks Canada's official visitor survey program to collect operational and performance information. Visitors are randomly selected at specific locations across the park. |

Table 2. This table lists references documents that will be provided.

| Title |
|---|
| Banff National Park of Canada Management Plan (2022) |
| Lake Minnewanka Cycling Facility Safety Assessment (2020) |
| Banff National Park Camping Report (2020) |
| Banff National Park Visitor Information Program Report (2018) |
| Lake Minnewanka Area Public Transit Feasibility Study (2016) |
| Lake Minnewanka Day Use Area Report (2016) |

# APPENDIX 2

# OVERVIEW MAPS OF SIX DAY USE AREAS

**Banff**
National Park

**Parc national**
Banff

**LAKE MINNEWANKA DAY-USE
AREA / AIRE DE FRÉQUENTATION
DIURNE DU LAC-MINNEWANKA**

Boat launch / Mise à l'eau
pour embarcation

Flush toilets / Toilettes

Outhouse / Toilette sèche

Picnic shelter / Abri de
pique-nique

Picnic table / Table à pique-
nique

Red chairs / Chaises rouges

Date: 2023-10-24

Imagery / Imagerie: 2017

Parking / Stationnement

Trailhead / Point de départ
de sentier

Roam Public Transit /
Autobus Roam

Trail / Sentier

Day Use Area / Aire de
fréquentation diurne

0    50    100

Metres/Mètres

N

Lake Minnewanka
Lac Minnewanka

Lake Minnewanka Road / Route du Lac-Minnewanka

Lake Minnewanka Road / Route du Lac-Minnewanka

*Two Jack Lake*
*Lac Two Jack*
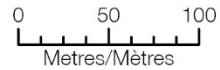
# Banff
**National Park**

**Parc national**
Banff

**TWO JACK LAKE DAY-USE AREA /
AIRE DE FRÉQUENTATION DIURNE
DU LAC-TWO JACK**

| | |
|---|---|
| Outhouse / Toilette sèche | Parking / Stationnement |
| Picnic table / Table à pique-nique | Roam Public Transit / Autobus Roam |
| Red chairs / Chaises rouges | Day Use Area / Aire de fréquentation diurne |

Date: 2023-10-24

Imagery / Imagerie: 2017

0   25   50

Metres/Mètres

N

# Banff
## National Park



Cascade Ponds
Étangs Cascade

**Banff**
**National Park**

**Parc national**
**Banff**

**CASCADE PONDS DAY-USE AREA /**
**AIRE DE FRÉQUENTATION DIURNE**
**DES ÉTANGS-CASCADE**

| Symbol | Legend |
|---|---|
| 🚻 | Flush toilets / Toilettes |
| 🚶 | Footbridge / Passerelle |
| 🚽 | Outhouse / Toilette sèche |
| ⛺ | Picnic shelter / Abri de pique-nique |
| 🪑 | Picnic table / Table à pique-nique |
| 🪑 | Red chairs / Chaises rouges |
| P | Parking / Stationnement |
| 🧗 | Trailhead / Point de départ de sentier |
| - - - | Trail / Sentier |
| ▭ | Day Use Area / Aire de fréquentation diurne |

Date: 2023-10-25

Imagery / Imagerie: 2022

0        50        100
Metres/Mètres

N

Banff National Park

JOHNSON LAKE DAY-USE AREA /
AIRE DE FRÉQUENTATION DIURNE
DU LAC-JOHNSON
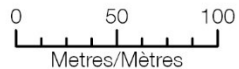
Parc national Banff

Johnson Lake Road
Route du Lac-Johnson

Johnson Lake
Lac Johnson

Boat-wash station / Poste de lavage des bateaux

Footbridge / Passerelle

Outhouse / Toilette sèche

Picnic table / Table à pique-nique

Parking / Stationnement

Trailhead / Point de départ de sentier

Roam Public Transit / Autobus Roam

Trail / Sentier

Day Use Area / Aire de fréquentation diurne

Date: 2023-10-24
Imagery / Imagerie: 2021

0        25        50
Metres/Mètres

N

# Banff
## National Park



## Banff
### National Park
### Parc national
### Banff

**UPPER BANKHEAD**

| Symbol | Legend |
|--------|--------|
| 🚻 | Outhouse / Toilette sèche |
| ⛺ | Picnic shelter / Abri de pique-nique |
| 🪑 | Picnic table / Table à pique-nique |
| 🅿 | Parking / Stationnement |
| 🥾 | Trailhead / Point de départ de sentier |
| - - - | Trail / Sentier |
| ▭ | Day Use Area / Aire de fréquentation diurne |

Date: 2023-10-24

Imagery / Imagerie: 2017

0    25    50

Metres/Mètres

N

# Banff
**National Park**
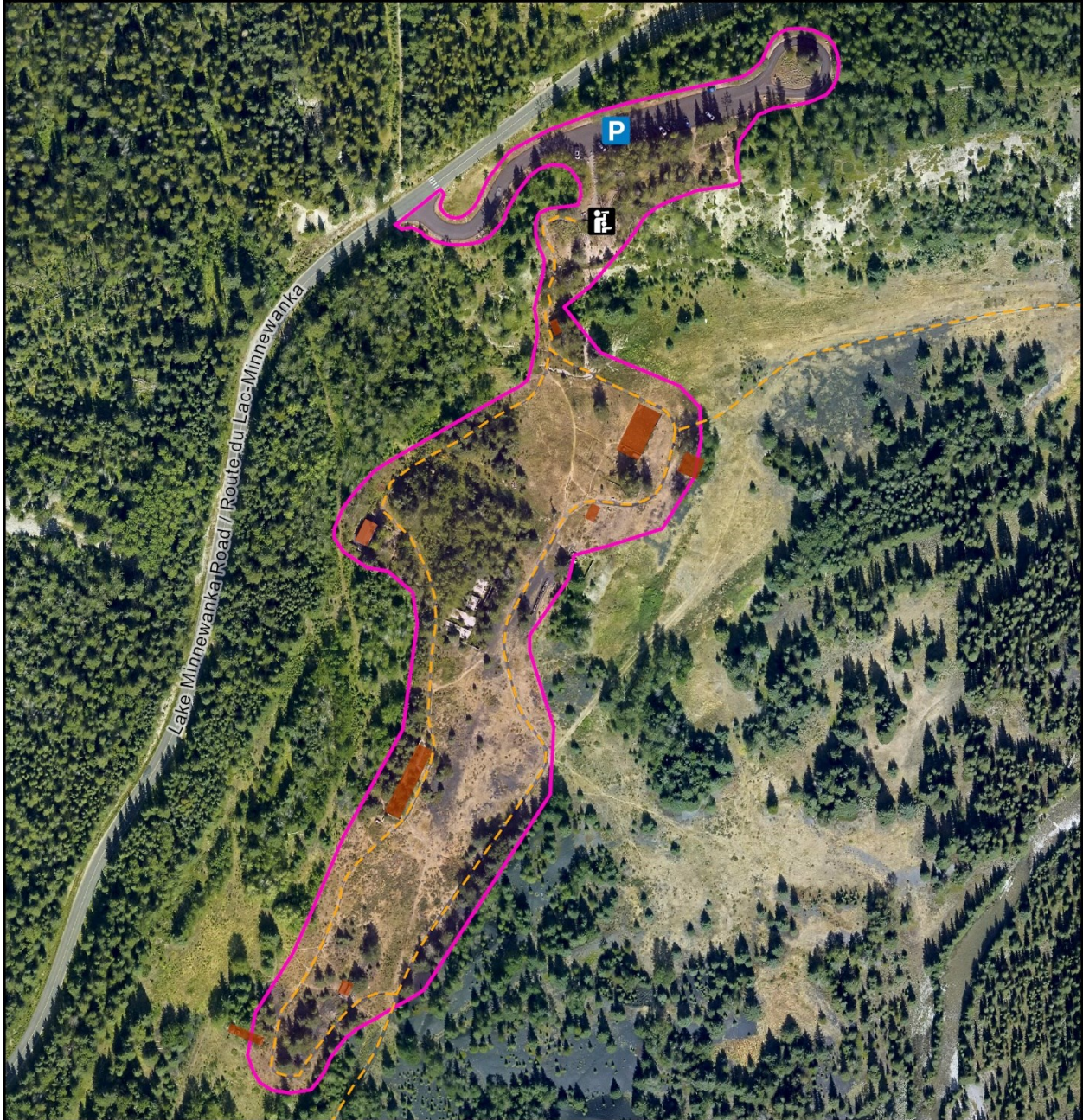
## Banff
**National Park** — **Parc national** Banff

**Parc national**

**LOWER BANKHEAD**

| | Lookout / Belvédère | – – – | Trail / Sentier |
|---|---|---|---|
| **P** | Parking / Stationnement | | Day Use Area / Aire de fréquentation diurne |
| | | | Historic Location / Lieu historique |

Date: 2023-10-25

Imagery / Imagerie: 2017

0    50    100

Metres/Mètres

N