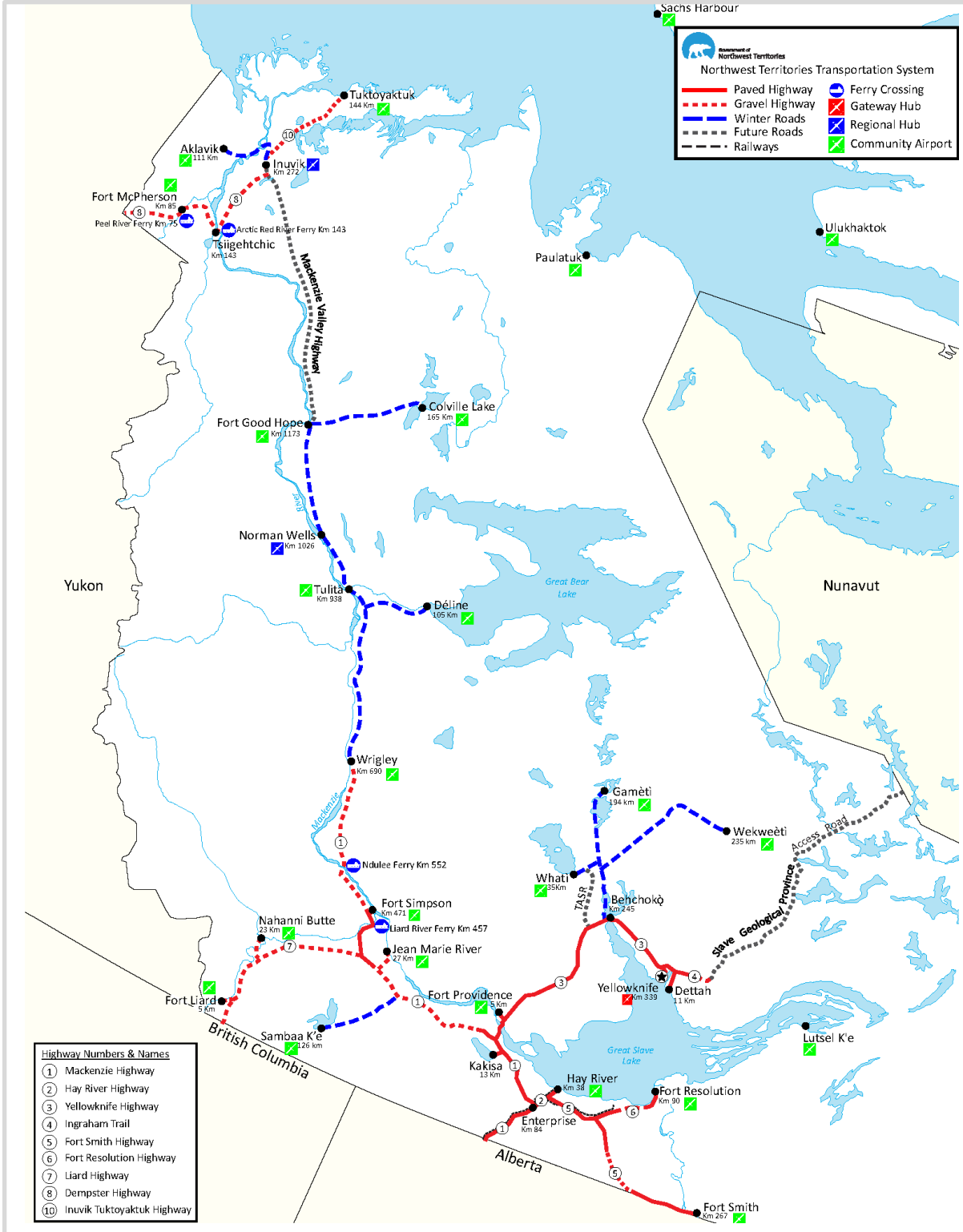



# NWT transportation system
## and climate change

**Website:** www.inf.gov.nt.ca
**Twitter:** @GNWT_INF

Government of
Northwest Territories

## Facts About NWT Transportation System

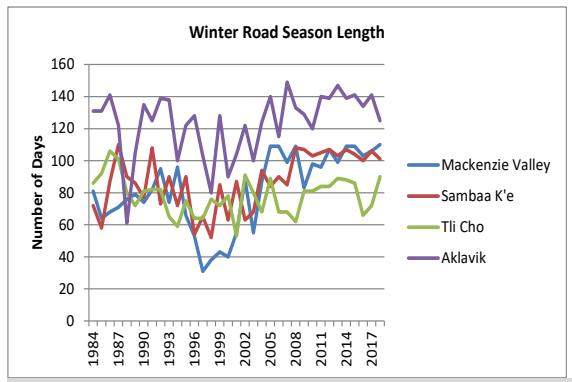
- 2,160 kilometres of all-weather highways
- 1,435 kilometres of winter roads
- 4 highway ferries:
  - Peel River ferry (highway 8)
  - Arctic Red River/Mackenzie River ferry (highway 8)
  - Liard River ferry (highway 1)
  - N'Dulee River ferry (highway 1)
- 27 airports including:
  - 1 gateway hub (Yellowknife)
  - 2 regional hubs (Inuvik and Norman Wells)
  - 24 community airports
- 6 paved runways and 21 gravel runways
- 8 tugs and 80 barges Marine Transportation Services
- 50 percent of freight entering NWT is by rail

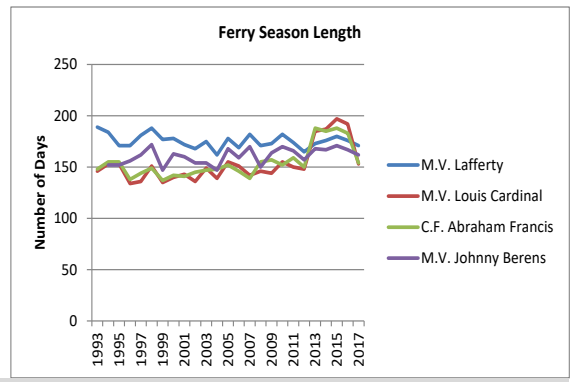
*Runway perrmafrost*

*High water at ferry landings*

## Impacts of Climate Change on Transportation Infrastructure

- Permafrost thaw negatively impacting airport runways
- Permafrost thaw negatively impacting all-weather highways
- Warmer temperatures negatively impacting winter roads
- Variable water levels and break ups negatively impacting ferry service
- Ice conditions impacting barge services to remote communities
- Significant precipitation changes impacting operations




*Construction of permanent bridges has extended Mackenzie Valley Winter Road season. Season length of all other winter roads and ferries relatively stable despite challenges of climate change.*

## Actions to Improve Knowledge of Climate Change Impacts

- Work with other jurisdictions, industry and academia on climate change related research, development and best practices for public infrastructure including highways, ferry crossings and airport runways
- Improve documentation of GNWT infrastructure stability on highways and airport runways
- Update climate change risk assessments for highways and airport runways
- Collect and analyze ground temperature data to support infrastructure planning, design, construction and climate change impact monitoring
- Monitor new construction techniques to mitigate impacts of climate change on infrastructure
- Continue to explore remote sensing and other technologies to acquire data for monitoring settlement and movement of GNWT infrastructure
- Collect ground temperature data and undertake permafrost related research along the Dempster and Inuvik Tuktoyaktuk Highways and Inuvik and Hay River Airports

## Actions to Build Resilience and Adapt to Climate Change

- Continue participation in development of standards for northern infrastructure (Northern Infrastructure Standardization Initiative Phase II)
- Constructing all-season roads to replace winter roads:
  - Construct Tłı̨chǫ All-Season Road
  - Construct Great Bear River Bridge
  - Complete permitting and construct Mount Gaudet All Season Road
- Increasing resilience of airport surface structures
  - Improving drainage to direct water away from vulnerable areas
  - Widening embankments
  - Using adaptive construction materials/technology to mitigate further permafrost degradation
- New operational systems and methods to address changing precipitation patterns
  - Upgrading fleet
  - Sanding or other chemicals for addressing frost and ice
  - Pre-wetting sand
  - Glycol retention pond (Yellowknife Airport)
  - New radar system to navigate fog (ferries)
  - Training of Community Airport Maintainers

*Shorter winter road seasons*