

## **OAG Climate Change Audit Report – Presentation to SCOGO - DM Opening Comments**

- Thank you Mr. Chair. The Departments of Environment and Natural Resources (ENR) and Infrastructure (INF) have prepared written Action Plans outlining each department's response to the recommendations in the OAG audit report. A joint presentation on the ENR and INF Actions Plans has been prepared.
- With me from ENR, I have Dr. Erin Kelly, Assistant Deputy Minister, Ms. Lisa Dyer, Director of the Environment Division and Mr. Rob Marshall, Manager of the Climate Change Unit.
- Climate change is an issue of serious concern for our government and for the people of the Northwest Territories. Over the last several years, the Department of Environment and Natural Resources (ENR), which is the lead on climate change for the GNWT, has:
  - Participated in the development of the Pan-Canadian Framework on Clean Growth and Climate Change;
  - Obtained federal funding to support GNWT efforts to adapt to climate change;
  - Tracked and reported on greenhouse gas emissions in the NWT;
  - Held workshops and public forums to discuss pressing climate change issues in the NWT;
  - Developed the Pan Territorial Adaptation Strategy with governments of Yukon and Nunavut; and,
  - Coordinated projects to understand the impacts of climate change in the NWT.
- Several years ago, ENR began work on an adaptation strategy in 2013 which then changed into work on the NWT Climate Change Strategic Framework in 2015, well before the OAG audit process was started. ENR has led development of the NWT Climate Change Strategic Framework which is currently out for public review and expected to be tabled in March 2018.
- The NWT Climate Change Strategic Framework is intended to be a comprehensive roadmap that will guide the territory's efforts on climate change from 2018 to 2030. It addresses three main areas:
  - Reducing our reliance on fossil fuels and the production of greenhouse gas emissions;
  - Increasing our knowledge of how a warming climate is impacting our biophysical environment, our economy and peoples' health and safety; and,
  - Improving our ability to increase resilience to withstand impacts from climate change or find ways to adapt where changes are unavoidable.
- The draft NWT Climate Change Strategic Framework incorporates recommendations from the OAG audit report and the federal Pan-Canadian Framework.
- I will now ask Paul Guy, the DM of Infrastructure, to provide his Opening Comments and introduction of his staff.

## OAG Climate Change Audit Report – Presentation to SCOGO

### INF Deputy Minister's Opening Remarks

17 January

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- Thank you Mr. Chair for the opportunity to address the recent audit report by the Office of the Auditor General.
- With me today from the Department of Infrastructure is Mr. Kevin McLeod, the Assistant Deputy Minister of Asset Management.
- The impacts of climate change, as well as the ways to mitigate and adapt to them, have been a challenge to the engineering and technical world of infrastructure around the globe for a number of years. Over the past decade and a half, we've seen a shift in the field of planning and design with the incorporation of climate change mitigation and adaption becoming a normal part of business.
- The changes we've seen in the North can be described as more substantial than in other parts of the world, and all of our risk assessments include climate modeling.
- Over the last few years, the Department of Infrastructure has:
  - Led and participated in the research and development work related to the impacts of climate change on northern infrastructure, including public buildings and transportation infrastructure. We have earned recognition for our leadership in this sector, both nationally and internationally. We are continuing to monitor key test sites to trial new designs and techniques to better manage the impacts of climate change. We have also installed over 60 information gathering sites on the new Inuvik Tuktoyaktuk Highway and are part of over 35 other case studies.
  - Climate Change adaption, mitigation and risk analysis has been part of DOI business plans for many years.
  - We have a robust inspection regime for all our major assets and well-funded programs such as the deferred maintenance

fund and capital asset refit fund to correct any areas we see being negatively affected.

- Our inspection regime produces a systemic Facility Condition Index to identify existing assets most in need of conservation and reinvestment to meet increased climate caused physical stress and distress.
  - We have developed detailed risks matrixes and undertaken vulnerability studies for all of our major assets, projects and developed a comprehensive Climate Change adaption plan in 2013 entitled “Change and Challenge”.
  - We have 450 major assets within our public building portfolio with 16 (3%) being assessed as requiring close monitoring. These assets are inspected on a regular basis as noted by the OAG with the only comment being no formal record was produced for 6 of these assets when no work was required or snow load to measure.
  - We have produced a world -class manual for the safe construction of ice roads and bridges that is copied in many other jurisdictions.
  - We have worked closely with and led other northern jurisdictions to coordinate projects to gain a better understanding of the impacts of climate change in the NWT, with a view to adjusting codes, designs, construction methods and best practices for Northern Projects.
  - We have developed a GNWT Energy Strategy to effectively deal with our unique energy issues implementing biomass heat source, solar and wind power projects to address the greenhouse gas emissions.
  - We are working with Canadian universities by sponsoring 4<sup>th</sup> year engineering students in order to gain northern experience, with the intention of bringing climate change issues directly to the next generation of designers and technicians.
- Although we have undertaken many initiatives and accomplished much on the technical front, an effective organization should always

strive for improvement and invite and welcome third parties to review its work. We appreciate the opportunity to work with the Office of the Auditor General on their report and thank them for their work, professionalism and recommendations. We agree with the recommendations put forth and have developed an action plan to address the issues.

- I will now ask Dr. Erin Kelly and Mr. Kevin McLeod to provide a presentation outlining the details in response to the Office of the Auditor General's specific recommendations.



# **NWT Climate Change Audit Report GNWT Response – Environment and Natural Resources (ENR) and Infrastructure (INF)**

January 17, 2018

PRESENTATION TO SCOGO

# Presentation on Departmental Action Plans

## ENR Action Plan to respond to the OAG recommendations

- Territorial adaptation strategy
- Information on climate change to support actions
- 2011-2015 NWT Greenhouse Gas Strategy – impact on emission levels (2 recommendations)
- ENR leadership on climate change
- Adapting to impacts on wildlife

## INF Action Plan to respond to the OAG recommendations

- Buildings and roads



# Territorial Adaptation Strategy (pg. 11)

The OAG recommended that ENR:

- Develop and implement a strategy outlining how the NWT will adapt to climate change, including:
  - The strategy should include risk assessments, input from government and residents, take into account regional diversity and current knowledge and have a clear implementation plan with indicators.



# Territorial Adaptation Strategy - Response

- ENR has addressed this recommendation with the draft NWT Climate Change Strategic Framework (CCSF), which covers emissions mitigation and adaptation.
- The draft CCSF was released for external review in early December. Comments can be submitted until January 19, 2018.
- A proposal has been developed to do an impacts costing study for the NWT to determine the financial implications and risks if action isn't taken on adaptation.





# Information on Climate Change (pg. 14)

The OAG recommended that ENR:

- Identify the climate change information needs of GNWT departments and communities.
- Provide departments and others with access to relevant information to support informed adaptation decisions.
- Monitor implementation of the NWT Knowledge Agenda.



# Information on Climate Change - Response

- ENR recognizes it has a role in sharing climate change information to support actions by governments, communities and the public.
- Information management and outreach are identified priorities in the draft CCSF.
- ENR continues to work on climate change outreach, is developing a plan and is rolling out a new program to support community efforts to build resilience and adapt to a changing climate.



## Target Setting / Impact on Emission Levels (pg. 18)

The OAG recommended that ENR:

- Develop a new greenhouse gas (GHG) strategy for the NWT that includes concrete actions for addressing GHG emissions and specific implementation steps; and,
- Actively monitor the commitments in its new GHG strategy and publically report on progress made on an ongoing basis.



# Target Setting / Impact on Emission Levels – Response

- The draft CCSF and associated 5-Year Action Plan will include concrete actions and specific implementation steps for addressing GHG emissions.
- ENR has set measurable emissions targets and will publically report on progress made over time.



## Draft CCSF – GHG Emission Targets

- The 290 kt reduction needed to meet the 2030 target of 1,150 kt; is broken down by sectors as:
  - Electricity generation – target is a 15 kt reduction;
  - Space heating – target is a 50 kt reduction;
  - Transportation – target is a 40 kt reduction;
  - Industry – target is a 100 kt reduction;
  - GNWT – target is a 8 kt reduction;
  - Cross-cutting – target is a 77 kt reduction.



## ENR Leadership on Climate Change (pg. 20)

The OAG recommended that ENR:

- Consider options for how to best fulfill its responsibilities as the lead for climate change within the GNWT, including:
  - What authority it needs; and,
  - Identifying the resources needed to fulfill its responsibilities.



# ENR Leadership on Climate Change – Response

- ENR is committed to continuing to make improvements to support its leadership role on climate change.
- Specific issues to consider include:
  - Its role and authorities;
  - Required resources; and,
  - Mechanisms to coordinate / communicate within government and with communities, industry and others.



# Adaptation to Impacts on Wildlife (pg. 24-25)

The OAG recommended that ENR:

- Identify and implement wildlife management actions to adequately adapt to climate change, including:
  - Conducting risk assessments;
  - Collecting information on impacts;
  - Taking action to address the risks identified; and,
  - Working to fulfill existing commitments.





# Adaptation to Impacts on Wildlife – Response

- ENR recognizes climate change as an important factor affecting northern wildlife.
- Wildlife monitoring, assessment and management is most effectively done on a species-specific basis and within a cumulative effects framework.
- ENR will build on its efforts to consider and address climate change impacts in its overall integrated approach to the monitoring and management of key indicator wildlife species.



# OAG Report – Infrastructure Impacts on Buildings and Roads

The OAG Report highlighted :

- INF does have the plans and systems in place to address climate change adaptation and mitigation for Transportation and Public Building Infrastructure
- Regular inspections and plans are conducted on the infrastructure at risk



# Adaptation to Impacts on Buildings and Roads

The OAG recommended:

- INF consistently carry out those operational practices that it committed to in order to manage the impacts of climate change on public buildings; and,
- INF consistently carry out those operational practices that it committed to in order to manage the impacts of climate change on roads, particularly for the management of small culverts and ice roads.



# Adaptation to Impacts – Response

- 10 point action plan
  - Update Risk Matrix (Transportation and Public Buildings)
  - Update Main Adaption and Mitigation Plans – coordination
  - Inspection Regime adjustments
  - Follow up – reports and progress
- Timeline – Start now – operational by 31 May 2018
- Assign the required resources
- Follow up and progress review



# Thank You



OFFICE OF AUDITOR GENERAL OF CANADA  
NORTHWEST TERRITORIES CLIMATE CHANGE AUDIT – OCTOBER 2017

Action Plan - Department of Environment and Natural Resources

The Office of the Auditor General of Canada (OAG) conducted a performance audit on climate change in the Northwest Territories (NWT) and presented their findings in October 2017. The OAG team made eight recommendations of which six pertain to the Department of Environment and Natural Resources (ENR).

This action plan is in response to the audit findings and recommendations and will be divided into five parts:

Part 1 – ENR did not develop a territorial strategy to adapt to climate change.

Part 2 – ENR did not fulfill its commitment to provide departments and communities with information needed to take action on climate change.

Part 3 – The territorial greenhouse gas strategy did not have a significant impact on reducing emission levels.

Part 4 – ENR did not address long-standing deficiencies affecting its leadership on climate change.

Part 5 – Adapting to impacts on wildlife.

## CONTEXT

This action plan focuses on the development and implementation of the NWT Climate Change Strategic Framework (NWT CCSF), which has been released for external review and comment in draft form and is expected to be tabled in the February/March session.

The draft NWT CCSF contains a vision statement and three goals. Significant progress on all three goals is required for the NWT to achieve the vision by 2030. The three goals are to:

Goal #1: Transition to a strong, healthy economy that uses 20% less fossil fuel by 2030 (compared to 2015);

Goal #2: Improve knowledge of the climate change impacts occurring in the NWT; and,

Goal #3: Build resilience and adapt to a changing climate.

## **PART 1 - ENR DID NOT DEVELOP A TERRITORIAL STRATEGY TO ADAPT TO CLIMATE CHANGE.**

The OAG team noted that ENR had started to work on a climate change strategic framework. However, the OAG made the following recommendation:

### **OAG Recommendation taken from October 2017 Audit**

*The Department of Environment and Natural Resources should develop and implement a strategy outlining how the Northwest Territories should adapt to climate change. The strategy should:*

- *Include a territory-wide assessment of climate change risks;*
- *Be developed with input from other territorial departments and residents;*
- *Take into account regional diversity, current adaptation efforts, and existing knowledge of climate change impacts in the territory; and,*
- *Include indicators to facilitate tracking of climate change adaptation progress, a clear implementation plan, and provision for ongoing assessments and updates as adaptation needs evolve.*

**The Department's response - Agreed. ENR is currently developing the NWT CCSF which addresses both climate change mitigation and adaptation.**

### **Action Plan - NWT CCSF**

The draft NWT CCSF was released for external review and comment in early December 2017. Goal #1 addresses emission mitigation and Goals #2 and #3 address climate change adaptation.

The draft NWT CCSF was developed based on departmental input from within the GNWT and extensive public consultation including six regional engagement workshops, a public survey, written submissions and stakeholder meetings.

The draft NWT CCSF applies to the entire NWT and reflects regional diversity, current knowledge of climate change impacts and opportunities, and current adaptation efforts. A commitment has been made to provide annual reporting on progress and conduct a formal evaluation every five years.

The draft NWT CCSF will be finalized based on the comments received from the external review and is currently scheduled to be tabled in the Legislative Assembly in March 2018. After the NWT CCSF is released, ENR will engage further with GNWT departments and with Indigenous governments and organizations, industry and other stakeholders to develop a 5-Year CCSF Action Plan to guide its implementation.

The 5-Year CCSF Action Plan will include indicators, implementation details and provisions for ongoing assessments and updates as adaptation needs evolve. The Plan is expected to be completed later in 2018.

## **PART 2 - ENR DID NOT FULFILL ITS COMMITMENT TO PROVIDE DEPARTMENTS AND COMMUNITIES WITH INFORMATION NEEDED TO TAKE ACTION ON CLIMATE CHANGE.**

### **OAG Recommendation taken from October 2017 Audit**

*To better support climate change information needs and adaptation decisions, the Department of Environment and Natural Resources should do the following:*

- *Identify the climate change information needs of Government of the Northwest Territories departments as well as those of communities;*
- *Provide departments and others with access to relevant climate change information to make informed adaptation decisions. This would include collecting new information, accessing information already available, and establishing mechanisms to house and share this information. The Department should work with other government departments, agencies, communities, and research institutes to identify existing climate-related information; and,*
- *Monitor implementation of the Knowledge Agenda: Northern Research for Northern Priorities.*

**The Department's response - Agreed. Information management and outreach are identified priorities in the draft NWT CCSF. The 5-Year CCSF Action Plan will contain specific initiatives to address these priorities.**

### **Action Plan – Information Management and Outreach**

Examples of existing climate change-related information management and outreach initiatives include:

- Delivery of an improved adaptation program that focuses on supporting community efforts to identify and prepare for climate-related impacts and opportunities. Improvements include a full-time position to work directly with communities and \$300,000 in annual funding to help communities to:
  - Directly access federal and other funding programs for adaptation, including those emerging pursuant to the Pan-Canadian Framework on Clean Growth and Climate Change (Pan-Canadian Framework);
  - Participate in local climate change-related research and monitoring projects; and,
  - Identify and implement specific measures to increase community resilience or adapt as needed.
- Development of a climate change outreach plan to:
  - Further define the information needs of departments, communities and others; and,
  - Develop additional mechanisms for sharing climate change information with different audiences;
- Discussion with Environment and Climate Change Canada's new Canadian Centre for Climate Services to determine how to better store and manage existing and future climate-related data and develop and improve delivery of climate information products in the NWT, including projections of future climatic conditions for NWT communities; and,



- Contribute to the development of an Action Plan to guide implementation of the NWT Knowledge Agenda, ensuring climate change is represented adequately as a cross-cutting theme.

Details on these and other initiatives will be included in the 5-Year CCSF Action Plan.

### **PART 3 - THE TERRITORIAL GREENHOUSE GAS STRATEGY DID NOT HAVE A SIGNIFICANT IMPACT ON REDUCING EMISSION LEVELS**

#### **OAG Recommendation taken from October 2017 Audit**

*The Department of Environment and Natural Resources should*

- *Develop a new greenhouse gas (GHG) strategy for the Northwest Territories that includes concrete actions for addressing GHG emissions, how the actions will address emissions, and the specific steps for their implementation; and*
- *Actively monitor the commitments in its new GHG strategy and publicly report on progress made and results achieved on an ongoing basis.*

**The Department's response - Agreed. The NWT CCSF includes mitigation of greenhouse gas (GHG) emissions in the NWT.**

**Through a CCSF action plan, ENR will identify concrete actions for addressing GHG emissions in the NWT and identify specific steps for implementation. Detailed actions related to energy supply, demand, and policy are included in the 2030 Energy Strategy being developed.**

**The performance measurement framework, as part of the action plan, will monitor how actions are addressing emissions and monitor commitments made in the CCSF and the 2030 Energy Strategy. ENR commits to reporting annually to the public.**

#### **Action Plan – Target Setting & Impact on Emission Levels**

The draft NWT CCSF establishes an overall territorial emission target of 1,150 kilo-tonnes (kt) for 2030.

This target is 30% below the NWT's 2005 emission level (1,638 kt) and is fully consistent with the approach taken under the federal Pan-Canadian Framework.

The NWT is currently at an emission level of 1,441 kt (as of 2015). A total reduction in territorial emissions of 290 kt is required to meet our 2030 target. A further 20% reduction in fossil fuel use in the territory is necessary to achieve this target.

ENR and the Department of Infrastructure (INF) have worked closely to ensure there is consistency in the development and implementation of the draft NWT CCSF and 2030 Energy Strategy. The draft NWT CCSF contains a high-level summary of the energy actions that can be taken to reduce territorial emissions.

Details on the specific measures to be implemented to improve the NWT's energy system and achieve the 2030 emission target are provided in the draft 2030 Energy Strategy and associated Energy Action Plan which INF is currently developing.

As noted in the response under Part 1, ENR will develop a 5-Year CCSF Action Plan to guide its implementation of the NWT CCSF. The 5-Year CCSF Action Plan will include implementation details and a performance measurement system with indicators, annual reporting and a formal evaluation process every five years to support renewal of the NWT CCSF and the incorporation of new information and priorities. The 5-Year CCSF Action Plan is expected to be completed later in 2018.

#### **OAG Recommendation taken from October 2017 Audit**

*In developing and implementing its greenhouse gas (GHG) strategy, the Department of Environment and Natural Resources should engage with stakeholders, including industry, to clearly identify commitments to address GHG emissions in each sector across the Northwest Territories.*

**The Department's response - Agreed. Regional engagement workshops, an online survey, and written submissions have informed requirements for addressing greenhouse gas emissions in the NWT in the NWT CCSF.**

**In the development of the 5-Year CCSF Action Plan, ENR will continue to engage with stakeholders and Indigenous governments to develop sector commitments.**

#### **Action Plan – Engaging with Stakeholders, Including Industry**

During 2016/17, ENR and INF worked closely to organize and complete extensive joint engagement activities to support the development of the NWT CCSF and the 2030 Energy Strategy.

This work included six regional engagement workshops, a public survey, written submissions and meetings with stakeholders. In November 2017, ENR and INF met with industry representatives to discuss an emission target for industry and potential federal funding opportunities for assisting industry to reduce fossil fuel consumption and associated emission levels.

Industry has also had opportunities to comment on the draft NWT CCSF and the draft 2030 Energy Strategy during external review.

Looking forward, ENR and INF will continue to engage with Indigenous governments and organizations and stakeholders, including industry, in the development and implementation of relevant measures in the Energy Action Plan and the 5-Year CCSF Action Plan.

## **PART 4 - ENR DID NOT ADDRESS LONG-STANDING DEFICIENCIES AFFECTING ITS LEADERSHIP ON CLIMATE CHANGE**

### **OAG Recommendation taken from October 2017 Audit**

*The Department of Environment and Natural Resources should consider options for how best to fulfill its responsibilities as the lead for climate change in the Government of the Northwest Territories. This could include*

- *Considering what authority is needed, and*
- *Identifying the resources needed to fulfill its responsibilities.*

*Some of these options could be considered as part of the Department's development and implementation of a territorial climate change strategic framework.*

**The Department's response - Agreed. The implementation of the NWT CCSF will be enabled through a 5-Year CCSF Action Plan to be developed in the 2017–18 fiscal year.**

**As part of this exercise, ENR will look at its authority, roles, and responsibilities, and the resources required to effectively carry out the CCSF.**

### **Action Plan – Improving ENR's Leadership on Climate Change**

ENR is committed to making improvements to support its leadership role on climate change.

Some steps have already been initiated to improve ENR's climate change leadership, including:

- Creation of an Assistant Deputy Ministers Climate Change Committee in 2016 to:
  - Support GNWT input to the Pan-Canadian Framework;
  - Coordinate GNWT input to the development of the draft NWT CCSF; and,
  - Provide a mechanism through which GNWT departments can communicate and coordinate on specific climate change issues and initiatives.
- An improved program to support community efforts to adapt to a changing climate (as described under Part 2 above) is currently under development. Once launched in April 2018, this initiative will help provide leadership and guidance to NWT communities seeking to address local climate change impacts and opportunities.

As ENR develops the 5-Year CCSF Action Plan in coming months, it will continue to assess and clarify its role as the lead Department responsible for supporting the implementation of the NWT CCSF and tracking and reporting on progress.

Further details on how ENR will clarify and implement its leadership role will be included in the 5-Year CCSF Action Plan.

## **PART 5 – ADAPTING TO IMPACTS ON WILDLIFE**

### **OAG Recommendation taken from October 2017 Audit**

*The Department of Environment and Natural Resources should identify and implement wildlife management actions to adequately adapt to climate change. This should include*

- *Conducting an assessment of risk for its overall wildlife management strategy to ensure that all climate change risks to wildlife have been identified;*
- *Collecting the information required to understand climate change impacts on wildlife, including the status of species in the territory;*
- *Taking action to address the risks identified; and*
- *Working to fulfill those commitments it had already identified as important to addressing climate change impacts on wildlife.*

**The Department's response - Agreed. Wildlife monitoring, assessment, and management are done primarily on a species-specific basis. As part of this approach, all factors that affect a species are considered in order to assess their cumulative impact on species/population health and resilience. Based on these assessments, management actions are identified that can be taken to maintain or enhance the overall status and resilience of populations.**

**Species-specific management plans are an important tool to identify species-specific threats (including climate change), recommend actions to address the cumulative impacts of these threats, and track changes in population size, trend, and overall health.**

**ENR will continue to consider climate change in this wildlife monitoring, assessment, and management approach. This will include efforts to identify and better understand climate change impacts on individual species, its contribution to cumulative effects, and species-specific options to mitigate cumulative effects and enhance population health and resilience.**

#### **Action Plan – Adaptation to Impacts on Wildlife**

ENR acknowledges it does not have an overall, stand-alone adaptation plan for all wildlife.

ENR recognizes climate change as an important factor affecting northern wildlife.

Wildlife monitoring, assessment and management is most effectively done on a species-specific basis that considers all key factors relevant to a particular species, including climate change.

ENR notes that it isn't feasible to monitor all wildlife species so we focus on indicator species.

ENR will continue to consider and address climate change impacts in its overall integrated approach to wildlife monitoring, assessment and management.

## **CONCLUSION**

The draft NWT CCSF already addresses all of the OAG recommendations on climate change.

ENR is committed to finalizing the NWT CCSF and developing and implementing a 5-Year CCSF Action Plan as soon as possible.

As this work progresses, ENR will continue to ensure that all of the OAG recommendations on climate change are responded to, given available resources, and continue to work closely with INF to coordinate efforts to reduce territorial emission levels and report publically on progress.

Draft for Review

## OAG AUDIT CLIMATE CHANGE NWT – OCT 2017

### Action Plan - Department of Infrastructure

The Office of the OAG conducted an audit of the NWT with respect to Climate Change and presented their findings in Oct 2017. The OAG team made 8 recommendations of which two pertained to the Department of Infrastructure.

This action plan is in response to the audit recommendations and will be divided into two parts:

Part 1 – Transportation Infrastructure

Part 2 – Buildings Infrastructure

Overall our action plan will be built on the following 6 key pillars:

- Reinforcing our current inspection regimes (process and training) for buildings and transportation infrastructure;
- measuring our performance and the results of the inspections;
- undertaking test sections with the various experts in order to develop new designs and measures to adapt or mitigate climate change for Northern Infrastructure;
- continue to work with other jurisdictions on research, development and best practices;
- complete an update on climate change risk assessments for our major infrastructure; and
- Updating our 2013 plan “Change and Challenge” by dovetailing all of INF various programs and the new Strategic Framework produced by ENR.

### **PART 1 - TRANSPORTATION**

The OAG team did note that INF had a plan to deal with Climate Change impacts on transportation infrastructure based on our 2013 Plan entitled “*Change and Challenge*” A Climate Change Adaption Plan for the Department of Transportation. However notwithstanding this plan, the OAG did make the following recommendation.

#### **OAG Recommendation taken from Oct 2017 Audit**

*The Department of Infrastructure should consistently carry out those operational practices that it committed to in order to manage the impacts of climate change on roads, in particular for the management of small culverts and ice roads.*

*The Department’s response. Agreed. The Department of Infrastructure has a number of cornerstone manuals, plans, and aids to assist our workforce and our contractors in achieving success. The Department will continue to refine these documents, along with the necessary training and education, to ensure that operational needs are met, the workforce remains safe, and the network remains safe, secure, and effective.*

## **Action Plan- Transportation**

NWT major transportation infrastructure assets are under a constant review and inspection process as part of our asset management and life cycle management processes. Assessing and documenting risks arising from climate change or other factors, along with recording the mitigating action taken, form part of the overall record. Transportation, INF, accomplishes this through the use of number of programmes. The major programmes are:

- Bridge Management System (BMS);
- Highways Surface Management System (HSMS);
- Visual inspections of our highways, right of way, bridges and culverts by trained regional and HQ staff.
- A guide/manual for safe ice construction and inspections of our ice roads and ice bridges (2015);

To specifically address the OAG recommendations and report, INF will, by 31 May 2018, reinforce the current inspection system to include minor infrastructure (small culverts, and ice crossings) to insure:

- An integrated system (BMS, HSMS, webworks and highways inspections reports);
- The generation of monthly regular reports to measure our performance with semi-annual summaries;
- Missing inspections are flagged monthly; and
- Follow up action is reported and prioritized monthly.

This integrated system will standardize the reports, and ensure that the follow-up work is prioritized and completed. This will be a positive reporting system that notes when an asset is inspected even if there is nothing significant to report. This reporting system will ensure that there is in place a monitoring system with feedbacks to track inspections to be rolled up in order to complete an annual report.

Coupled to the reinforced inspection regime, INF will also:

- Conduct a major risk assessment on the transportation infrastructure in the presence of climate change – updating the 2013 version and updating every two years based on current weather predictions; and
- Working with other Northern jurisdictions continue to lead and reinforce research and development in infrastructure and permafrost reinforcing the current RandD sites on Hwy 3, Hwy 10.

INF has already commenced the required work now and commit to having the action plan operational by 31 May 2018 under the leadership of the Director Transportation. See the summary table attached.



## **PART 2 - BUILDING INFRASTRUCTURE**

The Department does have a detailed inspection regime and major Deferred Maintenance program coupled with a very detailed Capital Asset Retrofit Fund (CARF) to deal with climate change, building efficiencies and reductions to greenhouse gas emissions. We also work extremely closely with the National level and other jurisdictions on reviewing building codes that impact design and maintenance in the face of climate change. The department has been dealing with climate change issues for close to 20 years and are seen as leaders in the field with respect to Northern practices.

### **OAG Recommendation taken from Oct 2017 Audit**

*The Department of Infrastructure should consistently carry out those operational practices that it committed to in order to manage the impacts of climate change on public buildings.*

*The Department's response. Agreed. All infrastructure should be under a constant review and inspection cycle as part of its life cycle. Assessing risk with respect to climate change or other factors, and documenting the risks along with the action taken, should form part of the overall record. As public buildings are designed and built under a strict national building code, the GNWT should continue to work with other Canadian jurisdictions, including the federal government, to ensure the building codes adequately address the issues.*

### **Action Plan - Public Buildings**

NWT public infrastructure assets are under a constant review and inspection process as part of our asset management and life cycle management practices. Assessing and documenting risks arising from climate change or other factors, along with recording the mitigating action taken, form part of the overall record. INF Asset Management accomplishes this through the use of number of programmes. The major inspection programmes are:

- Facility Condition Assessments (VFA database);
- Maintenance Management System (Azzier);
- Deferred Maintenance Program; and
- Capital Asset Retrofit Fund Program (improves energy efficiency of GNWT assets)

To specifically address the OAG recommendations and report, INF will, by 31 May 2018, reinforce the current inspection system as follows:

- Integrate our systems for inspections, monitoring and responses to climate change risks from snow loads, wind loads, permafrost degradation of foundation systems including adfreeze steel and timber piles, thermosyphons and other types of foundations within the maintenance management system;
- The generation of regular monthly reports to measure performance with semi annual summaries;
- Missing inspections are flagged monthly; and
- Follow up action is reported and prioritized monthly.



This integrated system will include standardized reporting, and ensure that the follow-up work is flagged, prioritized and completed. This will be a positive reporting system that notes when an asset is inspected even if there is nothing significant to report. This reporting system will ensure that there is a monitoring system in place with feedbacks to track inspections that can be rolled up in order to complete an annual report.

Coupled to the reinforced integrated inspection regime, INF will also:

- Conduct a major risk assessment on the public infrastructure in the presence of climate change updating the 2004 version and updating/reviewing every two years; and
- Continue working with other Northern jurisdictions, to lead and reinforce research and development in climate change adaptation for infrastructure and permafrost.

In detail INF will be seeking performance measures on:

- the bearing capacity of steel adfreeze piles, by region, in order to be able to forecast when these foundation systems may become at risk.
- alternate monitoring techniques for those thermosyphons foundations that do not have temperature monitoring instrumentation.
- Monthly inspections and documentation of observations which might indicate building movement/foundation failures such as uneven floors, drywall cracks, broken windows and other triggers to change; and
- Monthly inspections and documentation of observations, in the spring/summer for standing water under or around assets that creates a risk of permafrost degradation and document actions taken

INF has already commenced the required work and commit to having the system operational by 31 May 2018 under the leadership of the Director Facilities and Properties.

## **CONCLUSION**

The OAG report and audit on climate change conducted in 2017 highlighted the fact that INF does have risk assessments, inspections, programs and plans in place to deal with climate change and the key recommendation was to follow the program consistently throughout the Regions and ensure follow up action is taken.

Updating the major plan “Change and Challenge” to address the amalgamation of Transportation and Public Works along with coordinating all works with the new Climate Change Strategic Framework being developed by ENR will be the main focus of the work.

A 10 point action plan is shown on the attached TABLE 1 on page 5/5.

## Summary of INF Action Plan – Transportation and Public Building Infrastructure

### 10 Point Plan

Serial	Action	Time Line	Resources Required
01	Risk Assessment review Transportation Infrastructure	31 May 2018	Senior Planner plus 1 **
02	Risk Assessment review Public Building Infrastructure	31 May 2018	Senior Planner plus 1 **
03	Review/Update “Change and Challenge” to reflect the amalgamation and new Strategic Framework	01 July 2018	Directors plus Tech experts
04	Add small culvert and ice crossings to webworks or similar program to report on inspections	31 May 2018	Senior Tech plus 1 **
05	Monthly follow up to ensure reports are generated and action taken both Transportation and Public Buildings	31 May 2018	Director plus Planner
06	Semi Annual report on inspections Transportation and Public Building	01 July 2018	Directors and ADMs
07	Continue with RandD – Transportation and Public Buildings	01 Feb 2018	Directors and Managers
08	Continue to work with other Northern jurisdictions on best practises for Northern Infrastructure in response to Climate Change	01 Feb 2018	Directors and Managers
09	Reinforce current inspection regime (webworks and VFA) by adding snow loads, snow clearance, wind load, pile and thermo syphon inspections	31 May 2018	Senior Tech plus 1**
10	Review Progress on the action plan	30 March 2018 29 June 2018 28 Sep 2018	DM and ADMs

Note:

1. Current established and funded positions can under the review/update works;
2. \*\*\* denotes where further staff could be added if funds allow and approvals are provided