Office of the Auditor General of Ontario

Value-for-Money Audit: Highway Planning and Management

November 2022

Ministry of Transportation

Highway Planning and Management

1.0 Summary

The Ministry of Transportation (Ministry) has the authority to construct the province's highways, and the responsibility to maintain and repair them, under the *Public Transportation and Highway Improvement Act*. The Ministry manages provincial highway assets valued at $56 billion (excluding bridges and culverts). This includes over 40,000 kilometres of highway lanes covering a distance of about 17,000 kilometres.

The Ministry works to alleviate traffic constraints and to accommodate forecasted population and economic growth by investing in new highway projects through its highway expansion program. It also invests in maintaining and repairing existing highways through its rehabilitation program. In 2021/22, the Ministry spent nearly $2 billion on capital construction for highway expansion and rehabilitation projects. According to Statistics Canada, Ontario has some of the most well-maintained highways in Canada, ranking third after the Northwest Territories and Saskatchewan. In addition, according to Transport Canada, the rate of traffic fatalities in Ontario is the lowest in Canada.

Our audit found that Ontario does not yet have an overall long-term transportation strategy in place. However, the Ministry is taking positive steps toward developing an overall transportation strategy for Ontario, and has committed to developing four interrelated regional transportation plans. These transportation plans are intended to provide a roadmap for the Ministry's vision of a province-wide transportation system that integrates all modes of travel (road, rail, air and marine). Although the Ministry published the first of these transportation plans for the Greater Golden Horseshoe (GGH) region in March 2022, we found that the Ministry has not set timelines to finalize plans (that are currently in draft) for the rest of the province. In addition, we found that the GGH plan does not set short-term and long-term priorities, nor does it disclose the estimated costs and a time frame to implement the plan. Currently the Ministry has not been required to follow the GGH plan. In contrast, we noted that the province of Manitoba has publicly communicated the priorities, timelines and estimated cost of implementing its 2014 transportation plan.

Our audit also found that, over the last 10 years, the Ministry has consistently proposed highly rated highway expansion projects to the provincial government, based on the Ministry's prioritization assessment of each project, using nine key indicators along with other qualitative subjective factors. These indicators are intended to help meet the Ministry's vision to be a world leader in moving people and goods safely, efficiently and sustainably, in order to support a globally competitive economy and a high quality of life.

However, we found that, in 2019, the Ministry proposed deferring six highway expansion projects that were previously approved by Treasury Board/Management Board of Cabinet (Board), and recommended funding the construction of four highway projects identified as government priorities, even though these projects were ranked as a lower priority by the Ministry's technical and engineering staff. Our audit also found that the Ministry prioritized the four

highway projects at the direction of the Minister's office. We found that the Ministry's proposal to the Board neglected to communicate that the direction from the Minister's office was inconsistent with the recommendations of the Ministry's subject-matter experts who indicated that they would not have recommended those four projects at that time, and did not have a specific time frame for when they would have recommended them. Further, our audit found that the Ministry has since been directed by the Minister's office to prioritize another four highway expansion projects, including the high-profile Greater Toronto Area West (Highway 413) and Bradford Bypass projects.

Besides measuring highway condition ratings, we found that the Ministry's key performance indicators do not provide the Ministry with sufficient information to monitor and demonstrate the effectiveness of its highway planning and management operations or to publicly communicate their effectiveness to Ontarians in a number of other areas. In particular, we found that the Ministry has not established sufficient key performance indicators and targets for assessing the mobility of people and goods, highway safety, sustainability and environmental impact, and the achievement of projects on time and within budget.

The following are some of our more significant observations about the Ministry's highway programs:

- **The absence of a Ministry tolling strategy has contributed to inconsistent tolling practices in highway planning.** We found that the Ministry has not developed a consistent framework to assess the circumstances where tolling is appropriate—for example, to help recover the costs of constructing a highway to support commerce and the effective movement of Ontarians. The Ministry's lack of tolling authority and the absence of a framework for the use of tolling have contributed to inconsistent tolling practices in the construction of provincial highways. For example, while the Ministry has been asked by the government to explore tolling opportunities to lower the costs of a proposed highway project, it was also asked by the government to build a business case to remove tolls from Highways 412 and 418 before their costs have been recovered.
- **The Ministry's business cases for toll discontinuance and licence plate sticker fee removal did not follow the Board's guidelines and requirements.** At the direction of the Minister's office, the Ministry prepared business cases for two recent high-profile decisions affecting Ontario highway users (Highway 412 and 418 toll removals, and licence plate sticker fee removal). However, we found that these business cases did not meet Board guidelines and requirements to support effective decision-making. We found that, in contrast to the Board's requirements for business cases, the Ministry's proposals for these two initiatives did not provide adequate review time for the decision-makers and their analysts; did not provide all relevant information in their analysis of the recommendation and alternative options; did not identify all key risks or their mitigation strategies; and did not present adequate monitoring and evaluation plans for the recommended option. Additionally, we noted that the Ministry did not provide a rationale in its business case for why it sought approval to expedite the removal of tolls by April 5, 2022, which was less than two months before the provincial election.
- **The Ministry continues to perform manual road assessments that are less efficient and that duplicate assessments completed using its automatic road analyzers.** In 2013, the Ministry started using vehicles equipped with automatic road analyzers (ARANs) to scan and assess the condition of pavement on the province's entire highway network at least once every two years. However, we found that four of the Ministry's five regional offices continue to also perform manual assessments of the entire highway network's pavement every one or two years, duplicating the work completed using ARANs. These same four regional offices rely on the results of the more limited manual assessments to determine their highway rehabilitation

plans. In addition, nearly 10 years after the ARANs were implemented, the Ministry has yet to determine whether there is a continued need for manual assessments of the complete highway network.

- **Engineering consultant performance is not appraised in over 40% of assignments.** Although the Ministry is required to evaluate the work of engineering consultants after each design assignment, we found that the Ministry has not done so for 41% of the 1,416 assignments in the past 10 years (2011–20). We noted that the Ministry uses these evaluations to calculate a consultant's Corporate Performance Rating (a three-year weighted average of past performance on Ministry contracts). The Corporate Performance Rating (CPR) is a key variable considered by the Ministry in awarding contracts to consultants, accounting for as much as 50% of the Ministry's decision to award a contract. Therefore, failing to evaluate consultants after each assignment increases the risk that contracts for highway design work are awarded to poorly performing consultants for which the Ministry does not have a complete performance history.

This report contains 12 recommendations, with 33 action items, to address our audit findings.

Overall Conclusion

Our audit concluded that the Ministry did not consistently plan and prioritize highway projects effectively, based on provincial infrastructure needs. We found that, at the direction of the Minister, the Ministry recommended deferring highly-ranked highway expansion projects in favour of lower-ranked projects, without communicating to Treasury Board/Management Board of Cabinet (the government's committee of Cabinet that reviews and approves funding requests from ministries) that the Ministry's subject-matter experts did not agree with the direction from the Minister's office. In addition, without a provincial tolling strategy, tolls were removed from Highways 412 and 418 before their costs had been recovered. Ministry business cases to remove tolls on these highways and to remove licence plate sticker fees before the election were not provided to Treasury Board Secretariat (the Ministry provides advice and assistance to Treasury Board/Management Board of Cabinet) on a timely basis, and did not include all the information that the Board requires to make a decision on a business case.

Our audit also concluded that the Ministry's processes to identify and plan for the maintenance, repair and renewal of existing provincial highways were not always efficient. We found that nearly 10 years after the Ministry implemented the use of vehicles equipped with automatic road analyzers (ARANs) to scan and assess the condition of the province's entire highway network, four of the Ministry's five regional offices continue to also conduct manual assessments of their entire highway network. This duplicates the work completed by ARANs. In addition, we found that these four regional offices relied on manual assessments to determine highway rehabilitation plans instead of using ARAN-based assessments, even though the ARAN-based assessments capture far more data.

Finally, we concluded that the Ministry does not have effective processes to measure and publicly report on the performance of its highway planning and management. We found that the Ministry's existing key performance indicators do not provide the Ministry with sufficient information to monitor and demonstrate the effectiveness of its highway planning and management operations, nor to publicly communicate their effectiveness to Ontarians. In particular, we found that the Ministry has not established sufficient key performance indicators and targets related to the mobility of people and goods, highway safety, sustainability and environmental impact, and the achievement of projects on time and within budget.

OVERALL MINISTRY RESPONSE

The Ministry of Transportation (Ministry) thanks the Auditor General for her detailed review and recommendations. The Ministry recognizes the critical role it holds in the planning and management of

provincial highways. The Ministry takes its obligations very seriously and has robust processes and systems in place that use sound asset management principles to plan, prioritize, maintain, repair, and renew provincial highways. The Ministry looks forward to sharing our continued progress in implementing the recommendations with the Auditor General.

2.0 Background

2.1 Overview of Ontario's Highway Programs

The *Public Transportation and Highway Improvement Act* gives the Ministry of Transportation (Ministry) the authority to construct, and the responsibility to maintain and repair, the province's highways. The Ministry's vision is to be a worldwide leader in enabling mobility so that all people and businesses in Ontario can easily access the places, opportunities and services that help them thrive. The Ministry is responsible for the oversight and management of provincial highway assets valued at $56 billion (excluding bridges and culverts) as of March 31, 2022. In 2021/22, the Ministry spent nearly $2 billion on capital construction expenditures for highway expansion ($640 million) and rehabilitation projects ($1.333 billion).

Expansion projects involve planning, designing and constructing new highways, or expanding and extending existing highways, in response to existing traffic constraints and forecasted population and economic growth. Ontario's population is expected to increase by about 38% by 2046, and it can take up to 30 years to plan and construct a new highway expansion project, highlighting the importance of appropriate long-term highway planning and timely construction.

Rehabilitation projects involve renewal of existing highways, including repairing and repaving highways or repairing and replacing supporting structures. The average life expectancy of the vast majority of highway pavement is 15 years, and the Ministry aims to rehabilitate a third of the entire highway network every five years. Preventative maintenance and early repairs are more efficient and cost-effective than emergency work and reconstruction, so the timing and prioritization of rehabilitation work is critical.

The Ministry's Integrated Policy and Planning Division and its Transportation Infrastructure Management Division (TIMD) hold the primary responsibilities for planning, prioritizing, designing, and managing highway expansion and rehabilitation projects. TIMD also includes staff that work in the Ministry's five regional offices in Toronto (Central), Kingston (East), London (West), Thunder Bay (Northwest), and North Bay (Northeast) who plan, prioritize, manage, and co-ordinate highway projects located within each region.

2.2 Key Statistics

2.2.1 Ontario's Highways

The Ministry manages a network of over 40,000 kilometres of highway lanes covering a distance of about 17,000 total kilometres. **Figure 1** illustrates the number of highway lane kilometres and total distance by region.

Figure 1: Highway Distance and Lane Kilometres by Region, 2020/21

Source of data: Ministry of Transportation

Region	Distance (km)	Lane km[1]	Population (2021)[2]
Central	1,295	5,610	8,558,000
East	2,257	6,145	1,947,000
Northeast	6,861	14,650	657,000
Northwest	4,400	8,902	242,000
West	1,929	5,355	3,421,000
Total	**16,742**	**40,662**	**14,825,000**

1. Represents the length of highways in kilometres multiplied by the number of highway lanes.
2. Population data is based on the Ministry of Finance table for population projections for the 49 Census Divisions. Given that Ministry of Transportation Regions cut across some Census Divisions a simple allocation was used (i.e. if the major part of the Census Division is in one region, then the whole population for that Census Division is counted in that region). Numbers are rounded to the nearest thousand.

As shown in **Figure 2**, over the last six years (2016/17–2021/22), the Ministry has completed construction on 32 highway expansion projects and completed 859 highway rehabilitation projects across Ontario's five regions. (**Appendix 1** lists the 32 expansion projects.)

Each year, the Ministry publicly releases the Ontario Highways Program, which lists all expansion projects (for which the Ministry has secured government funding) and planned rehabilitation projects scheduled for construction in the next four years in each of the province's five regions (see **Figure 3**). Among the expansion projects, 25 are expected to cost more than $80 million each.

2.2.2 Performance Indicators

The Ministry uses three key performance indicators (see **Figure 4**) to oversee its highway management and planning activities relating to highway expansion and rehabilitation (excluding bridges).

Percentage of highway pavement in good condition: Although the summarized results on this indicator are not publicly reported, the data that supports this indicator is publicly available on the Ontario Open Data Catalogue. According to Statistics Canada, based on 2020 data, Ontario ranks third in Canada with 81.3% of highways in Good or Very Good condition, behind the Northwest Territories with 93% and Saskatchewan with 83.9% of highways in Good or Very Good condition. However, direct comparisons can be misleading because jurisdictions measure these scores with different methodologies.

Fatalities per 10,000 licensed drivers: The results on this indicator are reported publicly in the Ontario Road Safety Annual Report (https://www.ontario.ca/document/ontario-road-safety-annual-reports-orsar). In 2020, Ontario's provisional fatality rate was 0.51 per 10,000 drivers, which was the lowest in Canada and was below the national average of 0.65 per 10,000 drivers.

Average travel speed of commercial vehicles on 400-series highways: The results on this indicator are not reported publicly.

2.2.3 Highways Funding and Expenditures

The Ministry is funded to complete highway expansion and rehabilitation projects in Ontario across the Ministry's five regions (Central, East, West, Northeast and Northwest). To request funding, the Ministry prepares a rolling 10-year infrastructure plan and budget that includes highway expansion and rehabilitation projects. The Ministry includes this plan in its annual business plan.

Figure 2: Number and Cost of Highway Projects Completed by Region, 2016/17–2021/22

Source of data: Ministry of Transportation

Region	# of Projects	Project Value ($ million)
Expansion		
Central	9	1,838
East	5	313
Northeast	5	186
Northwest	2	267
West	11	414
Total	**32**	**3,018**
Rehabilitation		
Central	180	2,496
East	178	1,035
Northeast	198	1,577
Northwest	185	1,163
West	118	1,012
Total	**859**	**7,283**

Figure 3: Approved Highway Projects by Region, 2022–2025

Source of data: Ontario Highways Program, 2022

Region	Expansion	Rehabilitation	Total # of Projects
Central	11	103	**114**
East	3	103	**106**
Northeast	8	148	**156**
Northwest	7	136	**143**
West	13	76	**89**
Total	**42**	**566**	**608**

Figure 4: Key Performance Indicators for Ministry of Transportation Highway Program, 2016/17–2020/21

Source of data: Ministry of Transportation

Key Performance Indicator	Performance Results					Target
	2016/17	2017/18	2018/19	2019/20	2020/21	2020/21
Percentage of highway pavement in good condition	69	83	82	81	81	67
Fatalities per 10,000 licensed drivers	0.58	0.61	0.58	0.55	0.51	0.63
Average travel speed of commercial vehicles on 400-series highways (km/h)	94	93	92	92	94*	90

* Data for the period from April to December 2020 was excluded because of unusually low traffic stemming from the COVID-19 pandemic. Only data from January to March 2021 was considered.

The Treasury Board/Management Board of Cabinet (Board) is the government committee of Cabinet (provincial members of parliament of the party in power) that reviews and approves annual and in-year funding requests from ministries. It is supported by the Treasury Board Secretariat (Secretariat), which is the ministry responsible for government fiscal planning and expenditure management that provides advice and assistance to the Board. The Secretariat issues guidance to ministries on the funding-request process, and reviews funding requests and business cases. The Secretariat provides its analysis to the Board, along with a recommendation of whether to approve each request. Business cases are to adhere to the Board's Business Case Guide, which describes the filing process, documentation, and analysis instructions for all business cases requiring Board approval.

The Ministry's annual capital construction expenditures on highway expansion and rehabilitation projects have averaged $2.1 billion over the last 10 years (2012/13–2021/22), ranging from a low of $1.9 billion in 2018/19 to a high of $2.4 billion in 2015/16. In 2021/22, capital construction expenditures totalled $2.0 billion.

As **Figure 5** illustrates, highway expansion project expenditures have declined over the last 10 years, from $1.043 billion in 2012/13 to $640 million in 2021/22, a decrease of 39%. Over this same period, highway rehabilitation project expenditures have increased from $1.122 billion in 2012/13 to $1.333 billion in 2021/22, an increase of 19%.

2.3 Highway Expansion Projects

Highway expansion projects are usually conceived through regional transportation planning and transportation studies that lay out the Ministry's long-term transportation vision. These projects can take decades from the time they are conceived until they are constructed. **Figure 6** shows the stages in the Ministry's process for planning, prioritizing, designing and managing each highway expansion project.

2.3.1 Highway Expansion Needs Assessment

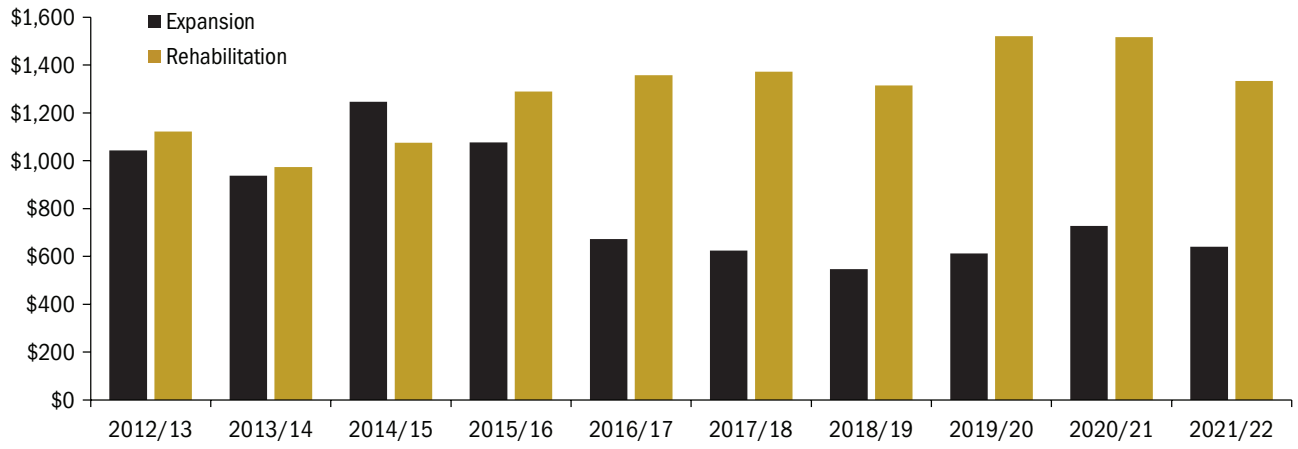
To determine existing highway needs and weaknesses, and to forecast future needs, the Ministry uses two travel demand forecasting models:

- Greater Golden Horseshoe (GGH) model, covering the local travel patterns in the GGH region (the densely populated and industrialized U-shaped region centered around the City of Toronto); and
- Transportation and Regional Economic Simulation of Ontario (TRESO) model, covering all of Ontario.

The GGH model focuses on a smaller area but at a greater level of detail than the TRESO model. The two models interact with each other to provide integrated estimates of population growth and travel demand forecasts. Both models are continuously updated using surveys and studies on the demographics and travel habits of Ontarians for the province's full highway network.

Figure 5: Capital Construction Expenditures* for Highway Projects, 2012/13–2021/22 ($ million)

Source of data: Ministry of Transportation



* Capital construction expenditures include expansion and rehabilitation projects involving bridges.

Figure 6: Process for Planning and Managing Highway Expansion Projects

Source of data: Ministry of Transportation

Stage of Project	Description
Needs Assessment	Each potential expansion project is assessed to determine its potential impact on the highway network (see **Section 2.3.1**).
Prioritization	Each potential expansion project is evaluated through a prioritization framework across nine key criteria to determine a priority level of high, medium, or low to the province (see **Section 2.3.2**).
Design and Construction	Depending on the complexity of a highway project, this stage can include the following: • government approval prior to significant design work; • preliminary design of the major elements and route of the project, including identification and evaluation of potential alternatives; • assessment of risks related to economic, social and culture factors that affect the community and the natural environment, including consultation with Indigenous communities and interested stakeholders; • acquisition of property necessary to construct the project; • selection of the project's delivery model (i.e., who designs, finances and builds the project); • finalization of the design for construction; • government approval prior to construction; • tendering of the construction contract; and • oversight of the construction. (See **Section 2.3.3** for descriptions of the listed items.)

The Ministry uses these two models to conduct a needs assessment on each highway expansion project that it has identified to be potentially beneficial to the continued mobility of people and goods in Ontario. Using these models, the Ministry assesses the potential impact of each project to determine whether it is expected to be effective at addressing existing and forecasted transportation needs.

Transportation Plans

In addition to assessing the needs of each major identified highway expansion project on an individual basis, the Ministry is transitioning to a comprehensive assessment of all identified transportation projects, including highway projects. To do so, the Ministry is using the GGH and TRESO models to assess potential projects relative to provincial needs, using various measures

of effectiveness (see **Appendix 2** for a listing of the measures). The Ministry is using these assessments to develop transportation plans that provide a roadmap for the Ministry's vision of a complete transportation system across the province that will inform planning, policy development, and the prioritization of projects (see **Section 2.3.2**).

The plans are expected to highlight the province's expected needs and potential solutions for transportation, including specific approved and proposed projects. They are also to consider all modes of travel (road, rail, air, and marine) as one integrated system and plan for 20–30 years into the future. The plans are being developed through a process that includes working with municipalities, Indigenous communities and organizations, transit agencies, community and business stakeholders and the public.

The Ministry is developing plans across four areas in Ontario: GGH, Northern Ontario, Southwestern Ontario, and Eastern Ontario. The GGH plan, published in March 2022, was the first of these plans to be finalized. The Ministry has also published draft plans for the other areas, which are still under development.

2.3.2 Prioritization

Each expansion project identified to benefit the province's highway network, based on the Ministry's needs assessment process, undergoes an evaluation to establish its priority for construction. To evaluate each expansion project and support funding decisions, the Ministry created the Expansion Prioritization Framework (EPF) in 2010, which the Ministry's technical and engineering staff use to assess each project across the nine key criteria shown in **Figure 7.**

After determining a project's score, the Ministry adds the project to its Long List, which contains all the highway expansion projects recommended by the needs assessment process that have not been approved for construction. The Ministry sorts this list into three priority groups based on their score: high (>550), medium (475–550) and low (<475).

Figure 7: Key Criteria for the Expansion Prioritization Framework (EPF)

Source of data: Ministry of Transportation

Key Criteria	Score
1. Change in total travel time delay	0–100
2. Change in weighted total collision frequency	0–100
3. Support for economic activity	0–100
4. Availability of alternate routes	0–100
5. Economic benefit of the project	0–100
6. Connectivity among transportation modes for goods movement	0–100
7. Value of goods movement	0–100
8. Alignment with provincial and municipal planning and policy priorities	0–100
9. Support for the use of transit	0–100
Total	**0–900**

In addition to a project's EPF score, the Ministry also considers a number of subjective qualitative factors (to which it does not assign a score), to further prioritize projects on its Long List, including funding availability, alignment with government priorities and mandates, regional Ministry oversight capacity, contractor capacity for construction, and timing based on other planned construction in the project's proximity. After considering these factors, the Ministry prepares a Short List of projects that it recommends to the Board for approval as part of the annual business planning process, as described in **Section 2.2.3.**

2.3.3 Project Design and Construction

After highway projects are prioritized, they must undergo various steps in order to design and construct them.

Beginning with the preliminary design stage of a highway project, the Ministry develops the project's design objectives and requirements, outlines the core elements of the design, identifies the likely route of the highway, and selects the most appropriate

delivery model for the project (determining who designs, finances and builds the project). For highway expansion projects greater than or equal to $50 million, the Board's directives require the Ministry to obtain initial approval from the Board before committing further funding to the planning and design of the project and, again, before proceeding to construction.

During the rest of the design stage, the Ministry progresses the project's design to the level of detail required for construction. Throughout this process, the Ministry also acquires all property required for the project, identifies the required utility relocations (to accommodate the highway route), and obtains all permits and approvals required for construction to proceed.

Most design work is performed by external engineering consultants and all construction work is outsourced by the Ministry to external contractors. All such contracts are required to go through an open competitive bidding process that includes an evaluation of price, capability, and past performance. The Ministry is to oversee construction to assess whether contractors complete work in accordance with contract documents, which include the project's design.

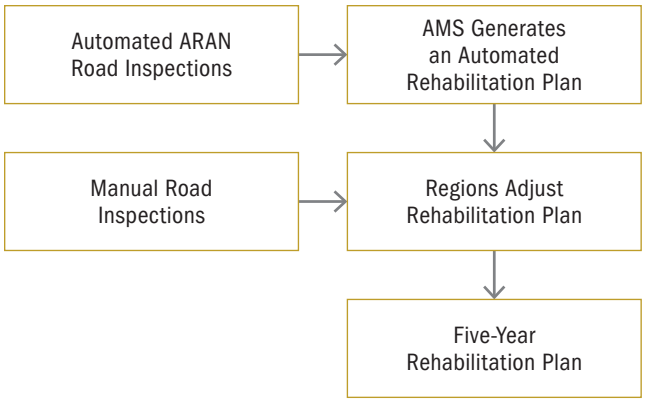
In parallel to the design stage, each highway project is required under the *Environmental Assessment Act* to undergo an environmental assessment that must be completed before construction begins. The environmental assessment is to evaluate alternatives to undertaking a project, the project's risks related to economic, social, and cultural factors that affect the community, as well as the project's potential impacts on the natural environment, in order to make recommendations to alter the project's design to mitigate those risks to an acceptable level.

2.4 Highway Rehabilitation Projects

As noted, the Ministry estimates the average life expectancy of the vast majority of highway pavement to be 15 years, and aims to rehabilitate a third of the entire highway network every five years. Rehabilitation projects generally require less capital investment (per project) than expansion projects. Nevertheless, some rehabilitation projects can cost hundreds of millions of dollars and require similar up-front work to that of expansion projects.

Figure 8: Pavement Rehabilitation Planning Process

Source: Ministry of Transportation



The Ministry uses a needs assessment and prioritization process that is unique to rehabilitation projects (see **Figure 8** for an overview of the rehabilitation planning process). In addition, the Board's directives only require the Ministry to seek the Board's approval for rehabilitation projects greater than or equal to $75 million in cost (instead of greater than or equal to $50 million for expansion projects). However, in all other respects, the Ministry's process for designing and building each highway rehabilitation project includes the same steps as the process for highway expansion projects described in **Section 2.3.3**.

2.4.1 Rehabilitation Needs Assessment

To determine the rehabilitation needs of provincial highways, and to report on associated metrics, the Ministry performs annual assessments of pavement condition across its highway network using automatic road analyzers (ARANs). ARANs are installed on vehicles (as shown in **Figure 9**) driven by Ministry staff

Figure 9: Automatic Road Analyzer Vehicle

Source: Ministry of Transportation

that travel along provincial highways at high speed to analyze road texture, categorize defects, and identify excessive wear to determine the road condition for a specific section of the highway. The Ministry typically scans one lane of the highway during the assessment (while also taking video recordings of adjacent lanes) and records the condition data of the pavement for each 2.5-centimetre interval of the entire length of the highway.

ARAN scan data is used to calculate the Pavement Condition Index (PCI), which uses algorithms to categorize the condition of sections of pavement as Good, Fair, or Poor in order to determine that section's rehabilitation urgency. ARAN scan results are uploaded to the Ministry's Asset Management System (AMS), which uses them to generate its recommended rehabilitation plan (see **Section 2.4.2** and **Figure 8**) and to calculate the percentage of pavement in Good condition, which the Ministry uses as a performance indicator (see **Section 2.2.2**). In addition, ARAN scan results are used to assess the pavement quality and highway geometry of completed highway projects against the approved design, and to provide evidence of road conditions for court cases where highway condition on a particular date is relevant.

Currently, the Ministry operates three vehicles equipped with ARANs. Since 2013, the Ministry has used ARANs to assess about 80% of the province's highway network annually.

Manual Pavement Inspections

The Ministry's five regional offices are also required to conduct manual pavement condition assessments (manual inspections) for the entire highway network at least once every two years. The Ministry intends these assessments to be used to support the ARAN-based assessment of the highway network in each region. Manual inspections primarily involve physical observation and assessment of pavement condition by regional engineers across a small sample of stops along the highway section being inspected. Each regional office is also required to conduct manual assessments of the condition of non-pavement highway assets (such as traffic signs and barriers).

The Ministry maintains a Pavement Condition Assessment Manual (Manual), which provides instructions and guidelines for performing manual inspections of pavement, including a requirement to document the inspection assessment results and any deficiencies in a Pavement Condition Report. While the ARAN data is used to calculate the Pavement Condition Index (PCI), the end result of a manual inspection is the Pavement Condition Rating (PCR). PCR is a subjective rating given by the pavement inspector after driving over a pavement section and visually observing the severity and density of pavement distresses. To calculate the PCR, the inspector evaluates two parameters with guidance from the Ministry's Manual: (1) ride quality and (2) the extent and severity of distresses in the sampled locations.

2.4.2 Rehabilitation Capital Plans

The Ministry uses its Asset Management System (AMS) to store details about its inventory of highway assets, including all highway pavement sections and their current condition as assessed by ARANs (described in

Section 2.4.1). Each year, the Ministry uses AMS to generate system-driven rehabilitation plans for each region, aimed at meeting the Ministry's target for 67% of pavement to be in Good condition over the long term. **Figure 10** shows the proportion of the Ministry's highway network in each of the Ministry's five regions rated by condition level.

The Ministry inputs its available pavement rehabilitation budget into AMS, which uses the budget as a financial constraint to prioritize pavement rehabilitation projects. The system-recommended plan and the anticipated budget are provided to each regional office. Technical and engineering staff at the regional offices review these system-recommended regional rehabilitation plans and use their expertise and local knowledge (such as information from manual inspections) to refine them. Thereafter, they are to be sent back to the Ministry's head office for final review and inclusion in the overall Ministry Rehabilitation Plan (see **Figure 8**).

2.5 Highway Tolls

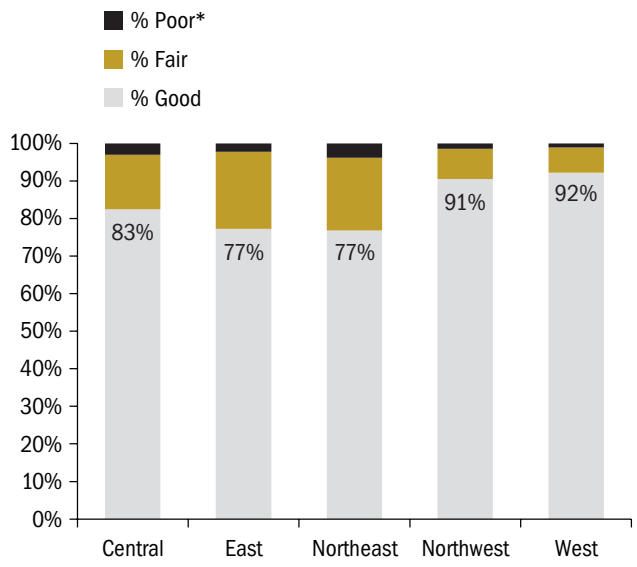
Since 2017, when the Ontario government began charging tolls on three of Ontario's highways (407 East, 412, and 418), toll operations have generated about $265 million in revenue for the Province. During this time, Highways 412 and 418 generated a combined $64 million, or 24% of the total toll revenue (see **Figure 11**). Tolls were put in place to help cover the costs of the highway expansion. Toll revenues from provincially owned highways are provided to the Ontario treasury to be used for government priorities.

3.0 Audit Objective and Scope

The objective of our audit was to assess whether the Ministry of Transportation has effective processes and systems in place to:

Figure 10: Condition of Ontario Highway Pavement by Region, 2020/21

Source of data: Ministry of Transportation



* According to the Ministry, a condition rating of "Poor" is not a direct indication of safety concerns; instead, it indicates the relative need for rehabilitation.

Figure 11: Ministry of Transportation Toll Revenue, 2016/17–2021/22 ($ million)

Source of data: Ministry of Transportation

Fiscal Year	Highway 407 East*	Highway 412	Highway 418	Total by Year
2016/17	4.2	1.4	Not Operational	5.6
2017/18	34.0	12.0	Not Operational	46.0
2018/19	39.6	12.0	Not Operational	51.6
2019/20	43.9	11.7	1.1	56.7
2020/21	31.1	9.3	1.3	41.7
2021/22	47.7	13.3	1.9	62.9
Total by Highway	**200.5**	**59.7**	**4.3**	**264.5**

* Revenues do not include tolls from the 407 ETR (Burlington to Pickering), which is leased to and operated by the 407 ETR Concession Company Limited. Although physically connected, this segment of the highway is a separate entity from Highway 407 East (from Pickering to Clarington), which is owned and operated by the Province.

- plan and prioritize highway projects based on provincial infrastructure needs;
- maintain, repair, and renew existing provincial highway assets in accordance with sound asset management principles; and
- measure and publicly report on the performance of highway planning and management.

In planning for our work, we identified the audit criteria (see **Appendix 3**) we would use to address our audit objective. These criteria were established based on a review of applicable legislation, policies and procedures, internal and external studies, and best practices. Senior management at the Ministry reviewed and agreed with the suitability of our objectives and associated criteria.

We conducted our audit between January 2022 and September 2022. We obtained written representation from the Ministry's management that, effective November 24, 2022, they had provided us with all the information they were aware of that could significantly affect the findings or the conclusion of this report.

Our work was conducted at the Ministry's head office in St. Catharines, and the Ministry's offices for the Central (Toronto), East (Kingston), and Northwest (Thunder Bay) regions. We also spoke with representatives from the other two regions, Northeast (North Bay) and West (London), via teleconference or videoconference. In addition, we obtained and reviewed data extracts and supporting documentation from these locations.

As part of the audit, we researched other jurisdictions to identify best practices for highway planning and management. We also spoke with stakeholders, including representatives from Treasury Board Secretariat and the Ontario chapter of the Association of Consulting Engineering Companies (the largest organization in Ontario that advocates for the interests of engineering consultants that the Ministry contracts for highway design work), to hear their perspectives on potential issues related to provincial highway planning and management, and on their involvement in the process.

We conducted our work and reported on the results of our examination in accordance with the applicable Canadian Standards on Assurance Engagements—Direct Engagements, issued by the Auditing and Assurance Standards Board of the Chartered Professional Accountants of Canada. This included obtaining a reasonable level of assurance.

The Office of the Auditor General of Ontario applies the Canadian Standards of Quality Control and, as a result, maintains a comprehensive quality control system that includes documented policies and procedures with respect to compliance with rules of professional conduct, professional standards and applicable legal and regulatory requirements.

We have complied with the independence and other ethical requirements of the Code of Professional Conduct of the Chartered Professional Accountants of Ontario, which are founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

4.0 Detailed Audit Observations

4.1 Transportation Plans

4.1.1 The Ministry Has Not Developed an Implementation Strategy for Its Transportation Plans

Although the Ministry has begun to develop its transportation strategy for Ontario, and has recently finalized and published a transportation plan for one of the province's regions, it has not established timelines to finalize plans for the entire province. In addition, for the one finalized plan, it has not established short-term and long-term priorities, nor has it disclosed the estimated costs and a time frame to implement the plan.

As discussed in **Section 2.3.1**, the Ministry is transitioning from assessing the merits of individual highway expansion projects (to support decisions to expand the province's highways) to developing comprehensive transportation plans that provide a roadmap for the Ministry's vision of a complete transportation system that addresses the province's expected transportation needs. These plans are to

consider all modes of travel (road, rail, air, and marine) as one integrated system and plan for 20–30 years into the future. Once finalized, Ontario will have four regional transportation plans.

The Ministry published the first of these plans, the Greater Golden Horseshoe Transportation Plan (GGH plan), in March 2022, which identified a future transportation network and included committed highway projects for the next 30 years. However, we found that the Ministry had not established implementation timelines for the GGH plan's short-term and long-term priorities; did not provide the estimated cost of the plan to Ontarians; did not establish methods for monitoring the plan's achievement of its targets; and did not establish a frequency for periodic reviews to assess whether the plan still addresses the needs of the province. In contrast, Metrolinx (the Ministry's partner agency for building and operating major components of the rail and bus network for the GGH plan) is required to create a transportation plan and set priorities for the implementation of the plan. We also found that, at the time of our audit, the other three transportation plans remained in draft form, and the Ministry did not have a targeted date to finalize these plans.

In our research of other jurisdictions, we found that the province of Manitoba and Milton Keynes (a designed city in the United Kingdom with all its infrastructure planned since its formation in the 1960s) had comprehensive transportation plans that publicly communicated their implementation priorities, timelines, key performance indicators, and the estimated cost of implementing the plans. In addition, we noted that Milton Keynes produces periodic reports on their progress toward implementing their transportation plan. As well, the Ministry's own jurisdictional research of transportation plans identified Florida as having one of the most comprehensive monitoring and reporting processes for their transportation plan, with a publicly reported scorecard that analyzes progress against its goals and objectives.

Establishing implementation priorities and timelines for its plans would help the Ministry's highway planning functions to better align with the plans (currently, the Ministry is not required to follow the transportation plans when selecting highway expansion projects). In addition, establishing performance indicators and periodic reassessments of the plans would allow the Ministry to monitor whether the plans' priorities are met as Ontarians' needs and transportation technologies change over time. Furthermore, estimating and publicly communicating the cost of implementing the plans would enable the Ministry to demonstrate to Ontarians whether the plans are achievable based on current levels of funding.

RECOMMENDATION 1

To realize the goals of having an overall provincial transportation strategy to effectively meet the transportation needs of Ontarians, we recommend that the Ministry of Transportation (Ministry):

- establish a targeted time frame to finalize and complete transportation plans for the entire province;
- establish short-term, medium-term and long-term project priorities for each regional transportation plan;
- estimate and publicly communicate the cost and time frame to achieve the goals of each regional transportation plan;
- require the Ministry to co-ordinate its planning and implementation to align with the Greater Golden Horseshoe transportation plan;
- require the Ministry to co-ordinate its planning and implementation to align with the other regional plans, once developed and approved for implementation;
- measure and report on the Ministry's progress in achieving the goals of each transportation plan; and
- periodically reassess whether each regional plan continues to meet the emerging needs of the province and adjust the plans accordingly.

MINISTRY RESPONSE

The Ministry of Transportation (Ministry) agrees with each of the recommended action items and will work to implement them.

With respect to targeted timelines to complete long range transportation network plans for all planning regions in the province, the Ministry is undertaking technical planning studies over the next two-to-three years for Southwestern and Eastern Ontario to inform the development of network plans for these regions. Thereafter, the Ministry will take steps to complete development of a transportation plan for Northern Ontario. The plans for these regions will be co-ordinated with each other and have a 30-year implementation horizon. In addition, in March 2022, the Ministry procured the services of a multidisciplinary team to support the Ministry to develop an overarching, province-wide transportation plan. As of April 2022, with the publication of Connecting the East, the Ministry had released draft transportation plans covering all regions of the province. The Ministry continues to implement the actions outlined in these plans, including the establishment of task forces in Southwestern and Northern Ontario to ensure the transportation plans are informed by local needs and priorities.

Recognizing that the Ministry's regional plans are multimodal, and that each plan will include recommended improvements to a system-wide network which includes components that are owned and operated by other organizations, the Ministry will establish short-, medium- and long-term project priorities under provincial jurisdiction for each regional transportation plan, and will strive to provide the appropriate cost estimates of provincial components publicly once the short-, medium- and long-term project priorities have been determined for each regional transportation plan.

The Ministry will also take steps to measure and report on its progress in achieving the goals of each transportation plan, and periodically reassess whether each regional transportation plan continues to meet the needs of the province.

4.1.2 Data Models Supporting Transportation Planning Are Not Independently Validated for Accuracy

The external consultants that had either developed or updated the Ministry's travel demand forecasting models also performed the periodic validation of the models' accuracy. Despite the potential conflict of interest that this arrangement poses, the Ministry did not independently review the validation work.

As described in **Section 2.3.1**, the Ministry uses two models to help objectively assess the advantages and disadvantages of different transportation alternatives by predicting travel choices and passenger/freight demands in the future. These models (one focused on the Greater Golden Horseshoe region and one on the rest of the province) were developed by external consultants in 2006 and 2014, respectively, and have since undergone revisions to update them. The two models inform transportation policy and planning. They are also used to develop transportation plans and to assess the impact of each Ministry-proposed highway expansion project on existing and forecasted transportation needs.

The Ministry validates the logic of the models (for example, the estimation of congestion relief from adding a highway lane) and their inputs (for example, current census data and population growth estimates) every five years. However, we found that the Ministry outsourced this task to the same consultants that had either developed or updated the models. In addition, the Ministry did not independently review the validation work completed by the consultants.

Having the same consultants that developed or updated the models review the completeness and accuracy of their own work creates a potential conflict of interest that would be avoided by having internal Ministry staff or an independent external party perform the validation work. Although the Ministry told us that they do not currently have sufficient

internal expertise to validate the models, we noted that multiple external consultants bid on the contracts to develop and update the models, indicating that it is possible to retain an independent party to validate the logic of the models and their inputs.

RECOMMENDATION 2

To demonstrate that the Ministry of Transportation (Ministry) effectively validates its travel demand forecasting models, we recommend that the Ministry:

- analyze the costs and benefits of hiring an independent subject-matter expert to perform the validation instead of using the same consultants that developed the models; and
- have validation work performed by internal Ministry staff on external subject matter experts.

MINISTRY RESPONSE

The Ministry of Transportation (Ministry) agrees with the recommendation and will take steps to address both action items. The Ministry recognizes that it is important to effectively validate its travel demand forecasting models.

4.2 At the Direction of the Government, the Ministry Prioritized the Construction of Lower-Ranked Highway Projects, Resulting in the Deferral of Higher-Ranked Projects

We found that, in 2019, the Ministry proposed deferring six highway expansion projects that were previously approved by the Treasury Board/Management Board of Cabinet (Board), and recommended funding the construction of four highway projects identified as government priorities, even though these projects were ranked as a lower priority by the Ministry's technical and engineering staff (see **Figure 12a**). Our audit found that the Ministry recommended prioritizing the four highway projects at the direction of the Minister's office. However, we found that the Ministry's proposals to the Board neglected to communicate that the direction from the Minister's office was inconsistent with the recommendations of the Ministry's subject-matter experts who indicated that they would not have recommended the four highway projects selected by the Minister's office at that time, and did not have a specific time frame for when they would recommend them. Between April 2012 and March 2022, the Ministry was directed by the Minister's office to prioritize eight highway projects that were not aligned with technical and engineering staff recommendations.

Each year, the Ministry prepares a rolling 10-year infrastructure plan and budget that it submits for approval to the Board, a committee of Cabinet (described in **Section 2.2.3**). Each year, the Ministry also considers adding new highway expansion projects to the plan. The projects that the Ministry adds to its plan are typically assessed and recommended by the Ministry's technical and engineering staff using the Ministry's Expansion Prioritization Framework (EPF) score (0–900) and priority ranking (high, medium, or low), along with other relevant subjective factors (described in **Section 2.3.2**). The Ministry uses EPF scores to assess the relative benefit of each viable highway expansion project it identifies.

We reviewed the 88 approval requests for expansion projects that the Ministry's technical and engineering staff recommended to be added to the Ministry's infrastructure plan over the last 10 years (2012/13–2021/22) and found that 51 (58%) requests were for projects that had a high-priority rating, 28 (32%) were for projects that had a medium-priority rating, and just four (4%) were for projects that had a low-priority rating. A further five (6%) requests were for projects that did not have a priority rating assigned.

We found that, in 2019, in addition to the existing expansion projects already in the infrastructure plan, which were recommended by the Ministry's subject-matter experts, the Ministry added four new expansion projects to the infrastructure plan that it categorized as government priorities. We noted that the decision to prioritize and add these projects to the 2019 infrastructure plan was made by the Minister's office. We found that the Ministry's subject-matter

experts would not have added these projects to the plan at that time and did not have a specific time frame for when they would do so in the future. The combined proposals exceeded the planned 10-year budget by $245 million. The Board directed the Ministry to re-prioritize the proposals to fit the budget.

These four highway project priorities were communicated to the Ministry by government officials primarily through meetings, rather than emails or letters. This left an incomplete record of how these decisions were made, by whom, and why. Although all expansion projects are subject to review and approval by the Minister's office before being added to the infrastructure plan, between 2012 and 2019, according to the Ministry's records, all other expansion projects added to the infrastructure plan were recommended by the Ministry's technical and engineering staff.

To stay within the 2019 budget while accommodating the four additional projects selected by the Minister's office, the Ministry proposed deferring six expansion projects that it had previously obtained funding and approval from the Board to construct, and removed those projects from its rolling 10-year infrastructure plan. In addition, the Ministry deferred seven other expansion projects approved by the Board

Figure 12a: Expansion Prioritization Framework (EPF) Scores for Government Priority Projects and the Projects Deferred to Fund Them

Prepared by the Office of the Auditor General of Ontario

	Highway Project	EPF Score	Priority	Total Estimated Project Cost[1] ($ million)
Government Priority Projects	Highway 401—Tilbury to London widening	525	Medium	1,000-2,000
	Highway 17—Kenora to Manitoba widening	525	Medium	500-1,000
	Highway 17—Arnprior to Renfrew widening	425	Low	400-600
	Highway 3—Town of Essex to Leamington widening	400	Low	<200
	Average	**469**		
Deferred Projects Previously Approved for Construction	Highway 417—Ottawa Queensway widening from Highway 416 to Maitland Avenue[2]	600	High	300-500
	Highway 401—Hespeler Road Easterly to Townline Road widening[3]	600	High	<200
	Highway 7—Kitchener to Guelph new four-lane highway[4]	550	Medium	1,000-2,000
	Highway 11/17—Highway 587 to Pearl Creek widening[5]	525	Medium	<200
	Highway 11/17—Red Rock Road 9 to Coughlin Road widening[5]	525	Medium	<100
	Highway 401—Highbury Interchange improvements and bridge replacement[6]	n/a	n/a	<200
	Average	**560**		

1. Ministry estimates as of November 23, 2022 (unaudited). Actual costs can vary from these estimates.
2. Project remains deferred.
3. Project subsequently approved for funding as part of the 2021/22 10-Year Capital Plan.
4. Project subsequently approved for partial funding as part of the 2022/23 10-Year Capital Plan. This estimate includes the Grand River Bridges construction costs.
5. Project subsequently approved for funding as part of the 2020/21 10-Year Capital Plan.
6. Reclassified as a rehabilitation project and funding subsequently received through the 2021 Fall Economic Statement. This project does not have an EPF score because it contains a bridge component, which is not scored using the EPF.

Figure 12b: Expansion Prioritization Framework (EPF) Scores for Deferred Projects Previously Approved for Planning and Design

Prepared by the Office of the Auditor General of Ontario

	Highway Project	EPF Score	Priority	Total Estimated Project Cost[1] ($ million)
Deferred Projects Previously Approved for Planning/ Design	Highway 6 (Hanlon Expressway)—Upgrade to freeway from Maltby Road to Speed River in Guelph[2]	675	High	300-500
	Highway 6 (Morriston Bypass)—New alignment south of Highway 401[3]	650	High	500-1,000
	Highway 6 (Hanlon Expressway)—Speed River to Wellington Road 7 upgrade[2]	625	High	300-500
	Highway 401/Highway 8—Full directional interchange[2]	625	High	300-500
	Highway 400—Langstaff Road to Highway 11 widening[4]	575	High	1,000-2,000
	Highway 401 Belleville—5 km east of Highway 62 to Wallbridge Loyalist Road widening[5]	550	Medium	500-1,000
	Highway 6—Highway 5 to Highway 6 North widening, including interchange construction[4]	500	Medium	<200
	Average	**600**		

1. Ministry estimates as of November 23, 2022 (unaudited). Actual costs can vary from these estimates.
2. Project remains deferred.
3. Project subsequently approved for partial funding as part of the 2021/22 10-Year Capital Plan.
4. Project subsequently approved for partial or full funding as part of the 2022/23 10-Year Capital Plan.
5. Planning and design work is proceeding.

for planning and design work to focus on all projects in the infrastructure plan (which are approved for construction), including the four government priority projects (see **Figure 12b**). In their analysis of this proposal for the Board, Treasury Board Secretariat (which is described in **Section 2.2.3**) noted that "there is a risk that MTO's proposal may lead to criticism as funding for projects with an overall higher ranking will be redirected to new projects with an overall lower ranking." However, we found that the Ministry did not identify to the Secretariat that these changes to its infrastructure plan, which were based on direction from the Minister's office, were inconsistent with the recommendations of the Ministry's subject-matter experts regarding when these projects should be built. **Figure 12a** lists the four new projects selected by the Minister's office, as well as the six projects that needed to be deferred by the Ministry to accommodate them. See **Appendix 4** and **Appendix 5** for maps illustrating the location of each project, as well as a brief description of each government priority and deferred project.

We noted that the four projects selected by the Minister's office were on the Ministry's list of projects previously assessed, scored, and prioritized by the Ministry's technical and engineering staff (described in **Section 2.3.2**). We reviewed the Ministry's prioritization scores for these four projects and found that two of them had a lower EPF score (and lower relative priority rating) than all of the projects deferred by the Ministry that had an EPF score, and the remaining two projects had a lower EPF score than all but two of the projects deferred by the Ministry that had an EPF score. See **Figure 12a** for the EPF score of each of these projects.

We also found that two of the six deferred projects approved for construction involved widening and repaving in Ontario's Northwest Region (the two

Highway 11/17 projects described in **Figure 12a**). The deferral of these two projects resulted in $158 million intended for Northern Ontario highway projects to be re-allocated to southern Ontario highway projects.

We noted that, since the deferral of expansion projects in 2019, Ministry staff have been able to re-incorporate five of the six deferred projects previously approved for construction into capital plans in the subsequent three years (see **Figure 12a** notes). In addition, as of August 2022, the Ministry resumed work on four of the seven deferred projects that were previously approved for planning and design work (see **Figure 12b** notes). However, it is not clear what effect the prioritization of the government's projects has had on other projects that the Ministry staff may have otherwise recommended to construct in subsequent years. By reprioritizing projects deferred to accommodate the government priorities, other projects may have been pushed back.

According to the Ministry's records, and to the best of their recollection, 2019 was the first time in the last decade (2012–22) when the timing of new expansion projects in the Ministry's infrastructure plan was not recommended by the Ministry's technical and engineer staff, but it was not the last. The Ministry's infrastructure plans submitted to the Board in 2021/22 included three additional government-priority projects that its subject-matter experts would not have recommended at that time.

As shown in **Figure 13**, two of these projects received a priority ranking of "low" from the Ministry, while the remaining project—the Bradford Bypass—received a ranking of medium. The Bradford Bypass was originally conceived by the Ministry in 1989, and is the largest of these three additional government-priority projects. The Bradford Bypass is currently undergoing a provincial environmental assessment. Its total cost is estimated to be between $2 and $4 billion.

In addition, we found that one additional project for the Greater Toronto Area (GTA), Highway 413 GTA West, was identified as a priority project in 2019 by the Minister's office at an estimated total cost greater than $4 billion. This project was originally conceived by the Ministry in 2002 and was included in Ontario's 2006 Growth Plan for the Greater Golden Horseshoe. Although this project received an EPF score of 668 (high priority) from the Ministry, the Ministry, as of August 2022, had not requested funding to construct the project because the project is still being designed and it is under review by the Impact Assessment Agency of Canada to determine whether an environmental assessment by the federal government is required. No construction on the project can begin until the federal environmental assessment process has concluded and sufficient design work has been completed.

According to the Ministry's current estimates, the total cost of the eight government-priority

Figure 13: Expansion Prioritization Framework (EPF) Scores for Government Priority Projects, 2021/22

Prepared by Office of the Auditor General of Ontario

Highway Project	EPF Score	Priority	Total Estimated Project Cost[1] ($ million)
Bradford Bypass (formerly known as Highway 400/404 Link)—New four-lane highway[2]	500	Medium	2,000-4,000
Highway 6—Highway 403 to Upper James Street widening	450	Low	300-500
Highway 40—Lambton/Sarnia widening	450	Low	<200
Average	**467**		

1. Ministry estimates as of November 23, 2022 (unaudited). Actual costs can vary from these estimates.
2. According to the Ministry's 2021/22 business plan, it re-allocated $83.8 million from the Metrolinx GO Niagara Extension project to the Bradford Bypass project.

projects (which includes the Highway 413 project) is expected to be greater than the Ministry's expansion project expenditures for the past 10 years (2012/13–2021/22), which totalled approximately $8.1 billion. We noted that unless the Board provides additional funding, the Ministry will not have sufficient funding to accommodate both the seven government priority projects that have already been approved (which do not include the Highway 413 project) and projects recommended by its subject-matter experts for the next 10 years. If approved, the Highway 413 project would become the largest highway project in the infrastructure plan. At this time, the Board has not committed to providing additional funding so that non-government-priority projects can be constructed.

We noted that Ontario has no process in place to identify and address instances where the Ministry is not in agreement with the direction provided by the Minister. In contrast, as described in our 2020 audit of Business Case Development in the Ontario Public Service, the United Kingdom has such a process. The United Kingdom HM Treasury's handbook, *Managing Public Money*, sets out four standards by which all public money must be handled: regularity (compliance with legislation or agreed-upon budgets); propriety (meeting the high standard of public conduct, including robust governance and transparency); value-for-money (achieving a good-quality outcome for the cost); and feasibility (likelihood of successful implementation). If a situation arises where a Minister decides to pursue a course of action that the accounting officer (comparable to a Deputy Minister) believes does not meet at least one of the above criteria, the accounting officer is required to write to the Minister expressing concern and requesting written direction to proceed. Upon receipt of a ministerial direction, the accounting officer is required to comply and a copy of the letter is shared with the Treasury, the Comptroller and Auditor General, Parliament's Public Accounts Committee, and the public.

RECOMMENDATION 3

To support accountable and transparent decision-making when selecting highway expansion projects, we recommend that the Ministry of Transportation (Ministry):

- request official written Ministerial direction when the provincial government's objectives do not align with the recommendations of the Ministry's subject-matter experts;
- submit business cases to Treasury Board Secretariat and Treasury Board/Management Board of Cabinet that include the Ministerial direction received; an explanation that clearly indicates why the Ministerial direction does not align with the Ministry's subject-matter experts; and the actions that the Ministry's subject-matter experts would otherwise recommend; and
- provide a copy of the written Ministerial direction to the Standing Committee on Public Accounts, the Auditor General, and the Comptroller General of Ontario; and
- make the written Ministerial direction public on its website.

MINISTRY RESPONSE

The Ministry of Transportation (Ministry) agrees to take steps to implement the recommended action items in instances where the government's objectives do not align with the Ministry's subject matter experts.

4.3 Road Condition Assessment

4.3.1 The Ministry Continues to Perform Manual Road Assessments That Are Less Efficient and that Duplicate Assessments Completed Using Its Automatic Road Analyzers

In 2013, the Ministry implemented the use of vehicles equipped with automatic road analyzers (ARANs) to scan and assess the condition of the province's

entire highway network at least once every two years. However, we found that nearly 10 years after implementing ARANs, four of the Ministry's five regional offices continue to perform manual assessments of their entire highway network every one or two years, duplicating the work completed by ARANs.

As described in **Section 2.4.1**, the ARAN technology enables the Ministry to scan and assess the condition of each section of the province's highways; calculate the Pavement Condition Index (PCI) for each section; and categorize the section as being in good, fair or poor condition, based on the calculated PCI. In addition, as described in **Section 2.4.2**, the Ministry's information systems use ARAN assessment results to produce automated recommendations for the rehabilitation of highways to meet the Ministry's target of 67% of pavement being in good condition, within the Ministry's available rehabilitation budget for pavement.

Although Ministry management told us that ARAN-based assessments of pavement are more efficient than manual assessments, and provide results that are more complete and less subjective, we found that the Ministry's Pavement Condition Assessment Manual still requires regional staff to conduct manual assessments of the complete highway network within each region at least once every two years. This is inconsistent with the Ministry's expectations (described in **Section 2.4.1**) for manual assessments to only be used to support the ARAN-based assessments–such as to perform a spot check to confirm or follow up on deficiencies identified using ARANs. Manual assessments are also expected to be used for targeted purposes where additional or more current information is required for a project, for which recent ARAN-based data is not available.

We found that with the exception of the Northwest region, which stopped performing manual assessments in 2018, the Ministry's remaining four regions continued to perform manual assessments of their entire highway network, duplicating the work completed using ARANs. Although the Ministry does not track the time it spends on these manual assessments, it estimated for us that about 20 of its staff have devoted about 10% of their time annually to completing them.

We also found that, in contrast to assessments completed using ARANs, which scan and assess the entire highway section inspected, manual assessments only involve a sample of points along the highway section, leaving it to the inspector's discretion to decide how many points to evaluate during an assessment. In addition, as described in **Section 4.3.3**, we found that the Ministry does not have a process to assess whether manual assessments are completed effectively and in accordance with its requirements.

The Ministry's head office had provided regional office staff with some training on utilizing ARAN-based assessments. However, Ministry management did not provide them with any direction to transition from manual assessments to ARAN-based highway network assessments by a certain date. As a result, only the Northwest region decided to switch from manual assessments to ARAN-based assessments of pavement. The Northwest region's transition towards automation was facilitated by having some of its staff trained on using ARANs (see **Section 4.3.2**)–this region now has the second-highest percentage of highways "in good condition" (see **Figure 10**). We discussed the differences in regional office pavement assessment practices with the Ministry's management who told us that it was planning to provide additional education sessions to regional office staff in the future to clarify its intent to transition to using ARAN-based assessments of the highway network's pavement instead of manual assessments.

Although continuing to conduct manual assessments after the introduction of ARANs likely helps to validate the accuracy of the automated assessments, we found the Ministry has yet to complete a province-wide comparison to determine whether there is any continued need to perform manual assessments of the complete network. We did note that three regional offices have been performing annual comparisons between a sample of ARAN-based assessments and their manual assessments for the same highway

sections, and determined that ARAN assessments produced accurate results that matched the results of manual assessments in the vast majority of cases.

4.3.2 Ministry Can Increase Effectiveness of Highway Condition Assessments Using Automatic Road Analyzers with More Trained Staff

The Ministry's staff tasked with completing highway condition assessments using ARANs have successfully assessed one lane of every section of the provincial highway network at least once every two years since the Ministry implemented vehicles equipped with ARANs in 2013. In addition, as noted in **Section 4.3.1**, the Ministry's regional offices have found that ARAN-based assessments of pavement produced accurate results. Nevertheless, we found that the accuracy and completeness of such assessments could be improved by training additional existing Ministry staff to increase the proportion of the highway network that the Ministry scans annually.

The Ministry's Pavement Evaluation Unit (PEU), which is based in Toronto, is responsible for completing assessments of the provincial highway network using vehicles equipped with ARANs. The PEU is comprised of two technicians that regularly operate the vehicles with ARANs, as well as a supervisor and a manager to oversee the unit. PEU staff receive specialized training to operate the ARANs.

We noted that the Ministry has not set a formal target for the proportion of the province's highway network that it expects the PEU to scan and assess annually. We found that, since the introduction of ARANs, the Ministry has scanned and assessed about 80% of the province's highway network annually, inspecting every section of highway at least once every two years. However, we found that the PEU generally uses ARANs to scan only one highway lane, irrespective of how many lanes a section of the highway contains. Ministry management told us that increasing the proportion of the highway network that is scanned annually would increase the accuracy and currency of assessment results. This would help improve the quality of data used by the Ministry's information system (described in **Section 2.4.2**), which relies on highway condition assessments completed with ARANs to produce automated recommendations for the rehabilitation of the province's highway network. Similarly, regional office staff told us that annual ARAN scans of all highway lanes and the full highway network would further decrease the need for manual inspections.

While PEU staff have enough vehicles equipped with ARANs, they do not have sufficient staff to increase the proportion of the highway network that they scan annually. Although the PEU has three vehicles with ARANs, the PEU advised us that it generally operates only one vehicle at a time since two technicians are required to operate one vehicle. With help from trained regional office staff, up to three vehicles with ARANs can be operated at the same time. In addition, weather delays also pose a challenge to completing condition assessments using ARANs, since ARANs cannot accurately scan wet pavement. According to the Ministry, for the results of the road condition scan to be effective, the pavement section has to be dry. Water distorts the scanner's readings of the depth and texture of the pavement, making it seem smoother than it is (and potentially hiding potholes or cracks).

We found that, in 2016, the Ministry trained five staff who were performing manual assessments at the Northwest and Northeast regional offices to operate one of the vehicles equipped with an ARAN. Having more ARAN-trained staff gave the Ministry greater flexibility to schedule around the weather and complete condition assessments using ARANs in these two regions. We also noted that the Northwest regional office subsequently discontinued manual assessments of their highway network. However, we found that the Ministry has not yet trained additional staff at the Ministry's remaining three regional offices to increase its capacity to scan highways using ARANs and reduce regional office reliance on manual assessments.

4.3.3 Ministry Does Not Assess Whether Manual Road Condition Assessments are Completed Effectively

We found that the Ministry does not have a process to assess whether manual highway condition assessments performed by regional office staff are completed effectively and in accordance with the Ministry's requirements.

As noted in **Section 4.3.1**, although Ministry management noted that ARAN-based assessments of pavement condition are more efficient than manual assessments, and provide results that are more complete and less subjective, the Ministry still also requires regional office staff to conduct manual assessments of the whole highway network within each region at least once every two years. As described in **Section 2.4.1**, the Ministry has developed a Pavement Condition Assessment Manual (Manual) that it requires its inspectors to follow when completing manual highway condition assessments. For each assessment, the Manual requires inspectors to determine a Pavement Condition Rating (PCR) and to document their assessment of pavement condition and related deficiencies in a Pavement Condition Report.

We found that neither the Ministry's head office nor its regional offices could demonstrate that they assessed whether inspectors complete manual highway condition assessments effectively in accordance with the Ministry's Manual. In contrast, we noted that the Ministry requires the work of all its external consultants to be evaluated. We also found that, at one of the three regional offices we audited, inspectors recorded the assessment scores but did not complete the required Pavement Condition Reports that support those scores for the inspections they completed. As a result, they could not provide documentation to support the deficiencies they found in their inspections, nor could they support the PCR they had determined for the condition of the highway network in their region. The absence of Pavement Condition Reports is concerning since, as described in **Section 4.4.1**, four regional offices still base major highway rehabilitation decisions on the results of manual assessments completed by their inspectors.

We also found that, although inspectors are required to document their assessment of pavement condition and deficiencies, the Ministry does not require them to take photographs of the pavement to support their assessment. In contrast, when the Ministry inspects provincial bridges, the inspectors are required to support their work with pictures of the portion of the bridge where deficiencies were identified. This enables the Ministry to later review the work to determine the most appropriate treatment strategies.

RECOMMENDATION 4

To efficiently and effectively assess the condition of the provincial highway network, we recommend that the Ministry of Transportation (Ministry):

- review and update the requirements of its Pavement Condition Assessment Manual to only utilize manual assessments of pavement in order to support assessments completed using vehicles equipped with automatic road analyzers (ARANs);
- set a target for the frequency and proportion of the provincial highway network it expects to assess using ARANs; and
- train additional staff at the Ministry's regional offices to be able to meet this target.

MINISTRY RESPONSE

The Ministry of Transportation (Ministry) agrees with each of the recommended action items.

The Ministry will develop a formal policy in 2023 that sets out the expectation to use automatic road analyzer (ARAN) data to assess the condition of highway network and update the Pavement Condition Assessment Manual to clarify when manual pavement condition assessments are necessary and that they are to support ARAN-based assessments. The Ministry has been transitioning to ARAN data from manual assessments to automated assessments over time.

The Ministry's specific targets for the frequency and scope of ARAN network data collection will be formalized during 2023. This will be done in consideration of the current ARAN fleet capabilities, degree of utilization, data storage and software needs, as well as staffing resources, to optimize the efficiency of the ARAN program.

The Ministry supports expanded training initiatives to elevate the knowledge and competency of regional staff to collect ARAN data and use it for network evaluations and project-specific needs.

RECOMMENDATION 5

So that manual assessments of highway pavement condition are completed effectively and contain sufficient documentation to support the assessed pavement condition rating, in cases where manual assessments are still needed, we recommend that the Ministry of Transportation (Ministry):

- establish a process to review whether manual assessments at each of its five regional offices are completed and documented in accordance with the Ministry's requirements;
- take corrective action where its review of assessments identifies deficiencies; and
- require inspectors to take photographs of pavement deficiencies to support their manual assessment.

MINISTRY RESPONSE

The Ministry of Transportation (Ministry) agrees with each of the recommended action items. The Ministry must ensure that its staff are proficient in the use of the Pavement Condition Assessment Manual and the use of pavement evaluation report templates.

To enhance the consistency and accuracy of manual pavement evaluations and the appropriate use of the manual assessments, the Ministry will develop a formal policy in 2023 that clarifies when manual pavement condition assessments are necessary. The Pavement Condition Assessment Manual and pavement report templates will be updated in 2023 to reflect these policy requirements as well as technical updates, such as the expectation for supporting information as appropriate, including photographs. In 2023, the Ministry will also develop a formal policy for the collection, storage and review of manual pavement evaluation assessments undertaken by staff. This will include a protocol for internal review to ensure consistency and quality of manual pavement reports.

4.4 Rehabilitation Capital Planning

4.4.1 Ministry Does Not Effectively Use Condition Assessment Data in Its Highway Rehabilitation Plans

The Ministry implemented information systems that use detailed pavement condition assessment data to produce automated recommendations to rehabilitate the provincial highway network. However, we found that lengthy interruptions to systems functionality and a failure to provide direction to staff to use systems data have resulted in Ministry staff largely ignoring this data. In four of five regional offices, staff instead rely on their more limited manual assessments to determine highway rehabilitation plans.

As described in **Section 2.4.2**, the Ministry uses its Asset Management System (AMS) to store and analyze key highway asset inventory, including pavement inventory and condition information. Results from annual ARAN scans are input into AMS to update pavement condition information, and AMS is then used to produce an automated recommended five-year highway pavement rehabilitation plan for each of the Ministry's five regions. These recommended rehabilitation plans are updated annually and provided to each regional office, along with anticipated regional budgets. The Ministry expects technical and engineering staff at the regional offices to review these system-generated regional rehabilitation plans and use their expertise and local knowledge to refine them. Thereafter, they are to be sent back to the Ministry's head office for final review and inclusion in the overall Ministry rehabilitation plan.

We found that none of the Ministry's five regional offices rely on the AMS-recommended rehabilitation plans for their region. Instead, four of the regional offices use the results of their manual assessments of highway pavement condition (described in **Section 4.3.3**) and their professional expertise to develop their regional rehabilitation plans. The remaining regional office (Northwest) supplements its professional expertise with ARAN-based assessment results (instead of manual assessments) to develop its regional rehabilitation plan, but still does not rely on the AMS recommendations as a basis. In the absence of direction from the Ministry's head office, four regional offices chose to use the results of manual pavement condition assessments instead of the ARAN-based assessments even though, as described in **Section 4.3.1**, the ARAN-based assessments capture data on a much larger proportion of the applicable highway section than do manual assessments.

We also found that once regional offices submitted their rehabilitation plans to the Ministry's head office, head office largely accepts the plans as-is, without reviewing them relative to the rehabilitation plan produced by AMS, as long as the expected cost of the plans was within the anticipated budget for the region.

We observed that lengthy interruption to the functionality of AMS may have contributed to the reluctance of regional staff to rely on AMS-recommended rehabilitation plans. The Ministry advised us that, following an effort to incorporate the province's bridges and large culverts into AMS rehabilitation planning, the Ministry was unable to verify the validity and accuracy of the system's calculations that formed the basis for the system's rehabilitation recommendations. As a result, between 2017 and 2019, the Ministry did not use AMS to produce highway pavement rehabilitation plans. Instead, regions were expected to use the regional rehabilitation plans produced by AMS in 2016 as a foundation, and to update them using available data (including the complete ARAN assessment results, which were unaffected by system issues and were available to each region). The Ministry resumed providing regions with updated system-generated rehabilitation plans in 2020.

RECOMMENDATION 6

To improve the consistency and accuracy of regional highway pavement rehabilitation plans, we recommend that the Ministry of Transportation work with its technical and engineering staff in the five regional offices to develop and implement a consistent process for developing and reviewing such plans, including establishing guidelines for when it is and is not appropriate to use the results of manual assessments instead of assessments completed using the Ministry's automatic road analyzers.

MINISTRY RESPONSE

The Ministry of Transportation (Ministry) agrees with the recommendation. The Ministry will develop guidelines to support a consistent approach for the development of regional highway rehabilitation plans. The Ministry anticipates this to be completed in the next 24 months.

4.4.2 AMS is Not Used to Assess the Rehabilitation Needs of About $2.6 Billion of Other Highway Infrastructure Assets

While AMS is used to record and analyze asset conditions and generate rehabilitation recommendations for pavements, bridges and large culverts, AMS is not used to record and analyze about $2.6 billion of the Ministry's "other infrastructure assets" that support highway infrastructure, such as noise barriers, traffic signals, overhead signs, drainage systems, small culverts, and lighting. Instead, these assets are recorded and their condition and rehabilitation needs are tracked manually using spreadsheets at each regional office. Regional offices periodically perform manual inspections of these "other infrastructure assets" to update their condition records and determine their rehabilitation needs.

The Ministry indicated that AMS could be configured to keep a record of these "other assets" and to make rehabilitation recommendations for these items using the results of manual inspections performed by regional offices. However, the Ministry noted that the AMS vendor would first have to establish appropriate asset classes for these "other infrastructure assets" before the Ministry could use AMS to record them and input the results from their manual inspections of these assets.

RECOMMENDATION 7

So that the Ministry of Transportation's (Ministry) information systems can generate more complete highway rehabilitation plans that incorporate all of the Ministry's highway assets, we recommend that the Ministry:

- have its information systems configured by the AMS vendor to record and track the condition of other highway assets (such as noise barriers, traffic signals, and overhead signs);
- input inspection results for other highway assets into its information systems; and
- use its information systems to make rehabilitation recommendations that include other highway assets.

MINISTRY RESPONSE

The Ministry of Transportation (Ministry) agrees with Auditor's recommendations.

The Ministry is in the process of procuring a new Transportation Asset Management System that will have the capability to incorporate information for other highway assets. The Ministry anticipates procuring the new system in 2023 and once implemented, using a phased approach to incorporate additional assets that are deemed beneficial to include. Thereafter, the Ministry will include relevant information for those applicable additional assets in its new information system and use the system to make rehabilitation recommendations that include those assets.

4.5 Engineering Contract Management

4.5.1 Engineering Consultant Performance Is Not Appraised in Over 40% of Assignments

Although the Ministry is required to evaluate the work of engineering consultants after each design assignment, we found that the Ministry does not do so for over 40% of assignments. This increases the risk that contracts for highway design work are awarded to poorly performing consultants for which the Ministry does not have a complete performance history.

The Ministry's policy requires that engineering service providers must have their performance assessed after every assignment (and during the assignment, depending on the duration of work), using the Ministry's standardized performance appraisals. Performance appraisals are used to calculate a service provider's Corporate Performance Rating (CPR), a three-year weighted average of past performance on the Ministry's contracts. CPR is one of the Ministry's key considerations when it awards a contract to a consultant, representing 25–50% of the total scoring weight, with the rest allocated to the bid price and consultant's technical ability. CPR is also used as the basis for determining performance-based penalties, including limitations on the types of work a consultant is eligible to bid on. If a service provider has no performance history with which to calculate a CPR, or has not received a performance evaluation in the three years preceding the applicable bidding process, the service provider is assigned a default CPR that is equal to the average CPR of all service providers.

We noted that the Ministry's engineering and project delivery staff have been completing fewer than 60% of their assigned appraisals of design consultants. Specifically, we found that, from 2011–20, Ministry staff completed just 59% of their 1,416 assigned appraisals. We also found that the completion rate varied by region, as shown in **Figure 14**.

As shown in **Figure 14**, between 2011–20, the Ministry awarded 1,416 engineering contracts. We noted

Figure 14: Engineering Consultant Performance Appraisals Completed by Region, 2011–2020

Prepared by Office of the Auditor General of Ontario

Region	Appraisals Completed (#)	Contracts Awarded (#)	Completion (%)
Central	287	406	71
East	106	242	44
Northeast	233	351	66
Northwest	159	261	61
West	43	116	37
Head Office	13	40	33
Total	**841**	**1,416**	**59***

* Percentage of appraisals completed in all regions and the head office.

that these contracts were awarded to 292 engineering consultants. However, we found that over this period, only 112 (38%) of these consultants received all required performance appraisals for their assignments, while 70 (24%) of the consultants received some of their performance appraisals, and 110 (38%) received none.

As a result, there is a risk that consultants with poor past performance may successfully obtain Ministry contracts because their CPR will not reflect poor performance on jobs that were not appraised. Conversely, there is a risk that consultants who have improved their work after earlier poor performance may not obtain Ministry contracts because their CPR may not reflect recent improvements to their performance. Incomplete performance appraisals also create barriers to effective data analysis of performance trends and implementation of corrective measures. Representatives from the Ontario chapter of the Association of Consulting Engineering Companies told us that a lack of timely appraisals has negatively impacted their members' ability to illustrate their past performance when bidding on Ministry contracts. (This association is the largest organization in Ontario that advocates for the interests of engineering consultants that the Ministry contracts for highway design work.) The association also noted that they had highlighted this as a significant issue during discussions with the Ministry.

We spoke to Ministry staff that support engineering and project delivery about why fewer than half of the required performance appraisals have been completed over the past 10 years. They noted the Ministry's performance evaluation process is comprehensive and, due to limited resources, they often have to prioritize activities related to project delivery over performance management.

RECOMMENDATION 8

So that the Ministry of Transportation (Ministry) only awards contracts to engineering consultants that meet the Ministry's performance expectations, we recommend that the Ministry complete timely performance appraisals for all consultants after each assignment.

MINISTRY RESPONSE

The Ministry of Transportation (Ministry) agrees with the recommendation and that the timely completion of consultant performance appraisals is important. The Ministry plans to develop a more streamlined appraisal process in 2023 that it plans to implement in 2024. The Ministry expects that this new process will enable it to complete evaluations more objectively and efficiently. In addition, the Ministry began development of a new Contract Management System (CMS) in January 2022 that is targeted for implementation in 2023. The Ministry expects that CMS will improve its ability to track consultant performance and contribute to the improvement of appraisal completion rates.

4.5.2 The Ministry Does Not Record All of Its Contracts, Change Orders, Claims, and Project Delays in Its Contract Management System

We found that the Ministry does not record all of its highway project contracts in its contract management system, nor does it record all change orders, claims, and time delays (including a meaningful description of what caused them) for these contracts. As a result, the Ministry cannot efficiently analyze data to identify and address systemic issues and trends that can result in additional costs.

The Ministry uses a contract management system to track and manage the vast majority of highway project contracts and related project issues. Project planning and design issues are often identified during construction and can result in change orders, claims or time delays. Change orders are modifications to the scope of work that was originally tendered and awarded. Claims are disputes between the Ministry and a contractor, which are intended to be a mechanism to resolve differences in interpretations of the terms of the contract.

We found that the Ministry does not record any engineering design contracts in its contract management system, nor was its system configured to record change orders, claims, or time delays for about 6% of projects over the last six years (2016–21). Change orders, claims, and delays to projects can result in significant costs to the Ministry. However, because complete information on these matters is not captured in the Ministry's contract management system, the Ministry cannot efficiently undertake complete analysis to identify systemic issues, including issues related to project design, that require follow-up and corrective action.

Among the 94% of projects for which change orders are recorded in the contract management system, a recent Ministry analysis identified that, between 2016 and 2021, the Ministry incurred about $343 million in change orders, relative to $5.6 billion in contracts for projects, of which 44% or $150 million were design-related. However, we noted that even in cases where change orders, claims, and time delays are recorded in the Ministry's contract management system, their specific causes are not recorded in searchable fields. As a result, the Ministry cannot use its contract management system to perform data analysis to identify systemic issues or trends over time that require follow-up and corrective action. Instead, change orders, claims, and time delays have to be reviewed manually, one at a time, to understand their contents and the reason for the change.

During our audit, the Ministry completed a manual analysis of change orders categorized as design-related and noted that some of the most common types of change orders were related to unexpected underground conditions found during construction and utility relocations (for example, power and gas lines) that were either not timely or were not correctly completed.

RECOMMENDATION 9

To manage its engineering consultant contracts more effectively, we recommend that the Ministry of Transportation:

- enhance its contract management system to capture details in a format that will enable systematic analysis of change orders, claims, and project delays;
- record all engineering consultant contracts in its contract management system, as well as all change orders, claims, and project delays; and
- periodically analyze change orders, claims, and project delays to identify systemic issues and trends, and to undertake follow-up and corrective action to address them.

MINISTRY RESPONSE

The Ministry of Transportation (Ministry) agrees with each of the recommended action items.

The Ministry began the development of a new Contract Management System (CMS) in January 2022. The system is targeted for implementation in 2023. The development of the Construction Contract module in this new system includes enhancements for the categorization of change orders, claims and project delays which will allow the ministry to periodically conduct analyses to

identify systemic issues and trends and to undertake follow up and corrective action. This system will be used to record all engineering consultant contracts. These contracts, among other processes, will include change orders, claims and project delays. Once the CMS is implemented, the Ministry will periodically analyze change orders, claims, and project delays to identify systemic issues and trends, and to take corrective action where it is needed.

4.6 The Ministry Does Not Have Sufficient Performance Indicators to Monitor the Effectiveness of its Highway Initiatives

We found that the Ministry's existing performance indicators do not provide the Ministry with sufficient information to monitor the effectiveness of its highway planning and management operations or to publicly communicate their effectiveness to Ontarians. In particular, we found that the Ministry did not have any indicators to measure the efficiency and effectiveness of its highway expansion initiatives, including whether they are completed on time and on budget, and whether they meet the Ministry's transportation vision.

As noted in **Section 2.2.2**, the Ministry uses three performance indicators to assess its highway planning and management activities. (See **Figure 4** for a description and the results for these indicators over the last five years.) We reviewed these indicators and noted the following limitations to measuring the effectiveness of the Ministry's highway planning and management operations:

- **Percentage of highway pavement in good condition.** Although this indicator provides valuable information on the proportion of highway pavement that is in good condition and does not require repair for at least six more years, the Ministry does not report the summarized results of this indicator publicly. As shown in **Figure 10**, the proportion of pavement in Good condition ranges among regions, from a low of 77% in the East and Northeast regions to as high as 92% in the West region, based on 2020 data. However, we found that the Ministry does not report the proportion of pavement in Fair or Poor condition. Reporting the proportion of pavement in both Good and Poor condition, by region, on an annual basis, would provide both government decision-makers and the public insight into how well the Ministry is prioritizing its regional rehabilitation efforts over time.
- **Fatalities per 10,000 licensed drivers.** This performance indicator provides a limited view of safety on Ontario's highways. The Secretariat echoed this view in 2021 when it recommended that the Ministry consider expanding safety-related performance measures to encompass other aspects of road safety, such as considerations related to pedestrians, cyclists, and impaired or distracted driving. We noted the Ministry captures data on collisions and injury severity that could help it to develop performance indicators and related targets to more effectively monitor and report on highway safety. As well, although the Ministry uses fatalities per 10,000 licensed drivers to assess the safety of the highway network, there are many variables that impact this performance indicator that are outside of the Ministry's direct control. These variables include, for example, the effectiveness of policing and the effects of weather. We also noted that Ontario's road fatality target has been set at a rate that may not drive performance improvement because the target has been achieved each year since a target was set in 2002. The Ministry advised us that Ontario has adopted the Canadian Road Safety Strategy 2025, whereby provinces aim to achieve continued improvements in the rates of fatalities and serious injuries. The adoption of this strategy further highlights the need to update the fatality target and implement targets related to serious injuries.
- **Average travel speed of commercial vehicles on 400-series highways.** Although the Ministry uses this indicator to measure highway capacity on Ontario's highway network, it may

not adequately reflect congestion during rush hour for all drivers, which could more accurately represent highway capacity. The Ministry indicated that reliable passenger vehicle data has now become available (that the Ministry can purchase), making it easier to establish corresponding performance indicators.

In addition to the limitations of the Ministry's existing performance indicators, the Ministry had not established key performance indicators for several aspects of their highway planning and management operations, including:

- highway safety, including assessment of non-fatal accidents and root causes (such as highway design, traffic volume, weather conditions);
- mobility of people and goods, including congestion impacts on non-commercial vehicles and connectivity to other transportation methods;
- sustainability and environmental impact, including emissions, energy considerations, and land-use planning; and
- achievement of planned expansion projects on time and within budget, and in accordance with the transportation strategy and published commitments in the Ontario Highways Program (described in **Section 2.2.1**).

RECOMMENDATION 10

So that the Ministry of Transportation (Ministry) can better measure and report on the effectiveness of its highway planning and management operations, we recommend that the Ministry:

- review its existing performance indicators to identify ways to improve their usefulness in measuring the effectiveness of the Ministry's operations and in communicating meaningful results to the public and the Board; and
- identify and implement additional performance indicators to measure and publicly report on additional areas of its highway planning and management operations, including whether projects are completed on time and within budgets, and whether they meet the Ministry's transportation goals and published commitments.

MINISTRY RESPONSE

The Ministry of Transportation (Ministry) agrees with the Auditor's recommendations.

The Ministry will review its existing performance indicators for highway planning and management operations and consider additional performance indicators to measure and report.

The Ministry anticipates completing the review of existing indicators and identifying viable additional indicators within 18-24 months and begin utilizing these indicators as new systems are implemented.

4.7 The Ministry's Business Cases for Toll and Licence Plate Sticker Removal Did Not Follow Guidelines and Requirements

Business cases for two recent high-profile Ministry proposals affecting Ontario highway users (Highway 412 and 418 toll removals, and licence plate sticker removal) did not meet guidelines set by Treasury Board/Management Board of Cabinet (described in **Section 2.2.3**) to enable effective decision-making.

The 2021 Treasury Board/Management Board of Cabinet (Board) Business Case Guide provides ministries with instructions for completing and submitting business cases that enable the Board to make financial decisions for the province. These instructions include the following:

- Draft business cases approved by the Assistant Deputy Minister should be provided to Treasury Board Secretariat (Secretariat, described in **Section 2.2.3**) no later than three weeks before the planned meeting of the Board. (High-risk or complex proposals should be flagged and shared with the Secretariat even earlier to allow for full discussions and assessments.) Submissions present a stronger business case when they provide full details on all key components, supported by verifiable and well-explained evidence.

- Option analysis should include a recommended option, two alternatives, and the status quo—with sufficient detail and analysis provided for each.
- The high risks and the mitigation strategies to address those risks should be identified for the recommended option.
- A strong monitoring and evaluation plan should be created for the recommended option.
- Initiatives related to the Ontario government's Red Tape Reduction initiative should include how the proposal links to the Ministry's reduction target and if the request will provide savings to regulated entities, reduce barriers for individuals, or generate savings within the Ministry.

At the direction of the Minister's office, the Ministry prepared business cases for the Board to remove tolls from Highways 412 and 418, and to eliminate the annual licence plate sticker and renewal fee. We found that the business cases for these proposed changes did not follow all of the Board's instructions, as we describe in the sections that follow. While it is within the purview of the Minister's office to direct the Ministry to prepare a business case for a particular course of action, the Board's Business Case Guide describes the Ministry's responsibility to present complete information, adhere to the relevant guidelines, and allow enough time for consideration in support of the Province's financial decisions.

Highway 412 and 418 Toll Removal

We found that, contrary to the Board's Business Case Guide, the Ministry did not provide its business cases for removing tolls from Highways 412 and 418 soon enough to permit the Secretariat to review them; did not provide an analysis of the option to keep the current tolls; did not identify all key risks of removing tolls and the related mitigation strategies; and did not include a monitoring and evaluation plan for the recommended option to remove tolls.

In December 2021, at the direction of the offices of the Minister and Premier of Ontario, the Ministry proposed to the Board that tolls be removed from Highways 412 and 418, targeting an implementation date of June 1, 2023. Subsequent to the Board's approval of this proposal, the Ministry made another proposal that was approved by the Board in January 2022 to accelerate the removal of these tolls, targeting an implementation date of April 5, 2022. The Ministry estimated that, over the next 30 years, the lost toll revenue related to these proposals would be $608 million. The Ministry also estimated that it would incur an additional $29 million in costs for required infrastructure changes and toll operator concessions.

We found that the Ministry did not provide these proposals to the Secretariat on a timely basis. The Secretariat is responsible for pre-screening and assessing Ministry submissions before recommending a course of action for the Board's consideration. In contrast to the Board's Business Case Guide, which indicates that proposals should be provided at least three weeks before the planned meeting of the Board, the Ministry submitted the first proposal in December 2021, just five days before the planned Board meeting. In addition, the Ministry submitted the second proposal (to accelerate the removal of tolls) in January 2022 on the same day as the planned Board meeting. This second proposal included additional time pressure, noting that a decision needed to be made immediately to accommodate tolling operator contract negotiations, which were to take place the following day. The Board meets every other week, so the Ministry had opportunities to present their proposals earlier to allow enough time for review and consideration. The Secretariat indicated that, although they were aware that the Ministry would be submitting a proposal on this matter, additional time, consistent with the Board's Business Case Guide, would have been helpful for assessing the details of the business case. It noted the importance of adhering to the Business Case Guide in the future.

Although required by the Board's Business Case Guide, we also found that the Ministry's business case did not present the status quo and an analysis of the status quo as one of the options (that is, keeping the current tolls on Highways 412 and 418). This was concerning because failing to do so also excluded

relevant facts and information that would have been useful to the decision-making process. For example, in January 2021, the Ministry published a tolling analysis report for Highways 407, 412 and 418, highlighting that the rapid construction of these highways was achieved because the provincial government budgeted, funded, and accounted for the projects based on the financial understanding that they would be tolled. The report goes on to say that, had the projects been delivered through the traditional provincial highway construction program, the construction projects would have been phased over several decades.

This tolling analysis report was not included in the Ministry's submission. Since the status quo was not presented as an option in the Ministry's business case, this report's observations were also not included, nor did the business case otherwise make clear that these highways were built on an accelerated schedule with the understanding that the Durham region (where the highways are located) would enjoy the economic and logistic benefits of the highways, but share the primary cost burden of their construction through tolls, and that by removing the tolls these costs would now be borne by all Ontarians. Highways 412 and 418 cost $1.3 billion to construct and toll operations were estimated to recover about $850 million of those costs within 30 years. According to the Ministry's records, about 5% of that $850 million had been recovered at the time the Ministry proposed removing the tolls.

We observed that, after assessing the Ministry's December 2021 business case to remove tolls, the Secretariat noted that the Ministry had been asked to provide details on the government's tolling strategy, including details on policy completed to date, and whether the current request in the business case signals future decisions on potential tolling options for other highway project commitments (such as the Bradford Bypass, Highway 413, and the Highway 401 expansion). However, we confirmed that the Ministry did not fulfil this request in its original December 2021 proposal, or in its January 2022 proposal to accelerate the removal of tolls. As we detail in **Section 4.8**, we observed that the Ministry does not have a tolling strategy for the planning and management of the province's highways.

We noted that the Ministry's proposal was presented as a relief for taxpayers, noting that "This proposal to remove toll rates will help taxpayers put money back where it belongs—in the pockets of hard-working Ontarians." However, we noted that removing tolls from 407 East was not considered in the analysis. We asked the Ministry why it did not consider removing tolls for all highways. The Ministry indicated that municipal representatives and MPPs seeking to eliminate tolls made no direct suggestion to remove tolls on the provincial Highway 407, and that their interest was to remove tolls from the north-south highways, noting that there was no precedent for tolling north-south highways.

We reviewed toll revenues and found that tolls from Highway 407 East account for about 80% of the Province's highway toll revenue (Highways 412 and 418 account for the remainder); therefore, their removal would result in a more significant impact on revenue. Additionally, we noted that the Ministry did not provide a rationale in its business case for why it sought approval to expedite the removal of tolls by April 5, 2022, which was estimated by the Ministry to cost Ontarians an additional $30 million.

We also observed that, upon completing its assessment of the Ministry's December 2021 business case to remove tolls, the Secretariat identified several risks that the Ministry did not assess and for which it did not identify mitigation strategies to address the risks. This included a "high risk" related to the overall impact on the budget in the absence of a plan to offset the lost revenue, and a "medium to high risk" related to setting public expectations for similar treatment of other tolled highways in the province. Despite the significance of these risks, we found that the Ministry again did not identify them or provide mitigation strategies to address them in its January 2022 business case to accelerate the removal of tolls.

The Ministry identified that, between April 2022 and June 2023, when tolls are to be permanently removed, it would cover the costs of motorists using the highways (estimated at $18 million) and reimburse the tolling operator directly. However, in contrast to the requirements of the Board's Business Case Guide, the Ministry did not include a monitoring

and evaluation plan in its business case for how it was going to manage the risks associated with this arrangement, including monitoring that motorists are not improperly charged tolls and that the Ministry correctly reimburses the tolling operator.

Licence Plate Sticker and Fee Removal

Before March 2022, license plate stickers were issued and required by Ontario to serve as physical proof of vehicle license plate registration with the province, and required a fee for their periodic renewal. In February 2022, at the direction of the Minister's office, the Ministry made the proposal to the Board to remove licence plate stickers and their cost to Ontarians, targeting an implementation date of March 2022. The Ministry estimated that removing the cost of licence plate stickers would result in revenue losses of $1.8 billion for 2021/22 and $1.1 billion every year after.

We found that the Ministry provided the signed business case to the Secretariat less than 24 hours before the Board's planned meeting to discuss it. Although the Secretariat told us it had received an earlier draft copy of the proposal six days before the Board's planned meeting, the Secretariat nevertheless had significantly less time to review the proposal than the minimum of three weeks required by the Board's Business Case Guide. The Secretariat subsequently assessed the proposal as high risk, which the Business Case Guide indicates should have been flagged and shared with the Secretariat earlier than three weeks before the meeting.

We also found that, similar to the Ministry's proposals to remove tolls from Highways 412 and 418, the Ministry's business case did not present the status quo and a related analysis as an option (that is, to keep the licence plate sticker renewal cost in place). As well, we found that the Ministry did not identify significant risks that the Secretariat subsequently identified during its review. These included the significant long-term impact on the Province's deficit; lack of stakeholder consultation (for example, policing organizations were opposed, and commercial vehicle operators were disappointed that they would continue to be required to pay for license plate stickers); and a failure to procure the services of a call centre (to address the public's questions) on a competitive basis.

We noted that the Ministry's proposal indicated that its timing was important to coincide with the Ontario government's Spring Red Tape Reduction Bill, which was to be announced in February 2022. However, we found that the Ministry did not include all of the components for Red Tape Reduction initiatives required by the Board's Business Case Guide—specifically, how the proposal links to the Ministry's reduction target, and if the request will provide savings to regulated entities, reduce barriers for individuals, or generate savings within the Ministry.

We also observed that the Secretariat's recommendation to the Board for this proposal was "Board Judgment". According to the Board's Business Case Guide, "Board Judgment" is intended to be used "when there is not enough information or the business case is insufficient, or there was inadequate time for Secretariat staff to develop a recommendation." However, our 2020 audit of Business Case Development in the Ontario Public Service noted that, in practice, "Board Judgment" has been used where the public service has conducted due diligence, but was not comfortable recommending the approval of a particular request because of the high risk associated with the request or because it was a government-driven request. In this instance, the Secretariat told us it made a recommendation of "Board Judgment" because of the significant fiscal impact that the proposal would have on the province.

RECOMMENDATION 11

To provide the government with the necessary information to make informed decisions, we recommend that the Ministry of Transportation prepare future business cases in accordance with Treasury Board/Management Board of Cabinet's

Business Case Guide, which includes guidelines for timeliness, presenting all required options, and identifying and addressing risks.

MINISTRY RESPONSE

The Ministry of Transportation agrees with the recommendation and will take steps to ensure that all business cases it prepares in situations like those described in the auditor's report fully address Treasury Board/Management Board of Cabinet's Business Case Guide. Every effort will be made to ensure that business cases contain robust options and risk analyses and communicate if guideline requirements have not been achieved.

4.8 The Absence of a Ministry Tolling Strategy Has Contributed to Inconsistent Tolling Practices in Highway Planning

We found that the Ministry has not developed a framework for the use of tolling to be considered in the planning of each provincial highway project. This leads to the inconsistent consideration of tolls across the Ministry's portfolio of highway projects.

We noted that the Ministry does not have authority under the *Public Transportation and Highway Improvement Act* to implement tolls on provincial highways. Instead, the decision to toll or to remove tolls from a highway in Ontario is undertaken through the introduction (or amendment) of highway-specific legislation and regulations (for example, the *Highway 407 East Act*, which allowed tolling of Highways 407 East, 412 and 418). In these instances, the Ministry has been asked to provide analysis and advise on tolling to support government decision-makers. However, we found that the Ministry has not developed a consistent framework for the use of tolling to be considered in the planning of each provincial highway project, such as the circumstances where using tolling to recover the costs of constructing a highway is appropriate and beneficial to facilitate commerce and the effective movement of Ontarians.

The Ministry's lack of tolling authority under the *Public Transportation and Highway Improvement Act*, and the absence of a framework for the use of tolling, have contributed to inconsistent tolling practices in the construction of provincial highways. We noted, for example, that while the Ministry has been asked by the government to explore tolling opportunities to lower the costs of a proposed highway project, it was also asked by the government to build a business case to remove tolls from Highways 412 and 418 (described in **Section 4.7**) before their costs have been recovered. In the case of Highways 412 and 418, in the absence of a framework to support a technical analysis of the costs and benefits of removing tolls to Ontarians, the Ministry highlighted linkages to government priorities, noting that "this proposal to remove toll rates will help taxpayers put money back to where it belongs—in the pockets of hard-working Ontarians."

Our research identified a number of jurisdictions where the Ministry of Transportation (or equivalent) has the authority to make tolling decisions directly (for example, in British Columbia, the Ministry of Transportation and Infrastructure has the ability to implement tolls and set toll rates through British Columbia's *Transportation Act*, subject to the approval of the Lieutenant Governor in Council). We also found instances where independent highway tolling authorities were established to analyze and decide whether tolling is suitable for new highways. For example, the Washington State Transportation Commission (the state's tolling authority), a seven-member body of citizens appointed by the governor, is responsible for developing policies and criteria for tolling, providing recommendations to the government for where to implement tolls, and setting toll rates.

RECOMMENDATION 12

To provide consistent analysis and advice to government decision-makers on the funding of proposed provincial highways, we recommend that the Ministry of Transportation:

- review leading practices in other jurisdictions on the use of tolls and setting toll rates;

- develop an information paper that includes the circumstances where tolling may be appropriate and beneficial to facilitate commerce and the movement of Ontarians, if needed in the future; and
- provide the government with the information paper should circumstances arise where tolling could be considered.

MINISTRY RESPONSE

The government has publicly stated a commitment that road tolls will not be considered for new highway projects. The Ministry of Transportation agrees with the recommended action items and will take steps to address each of them to have information on tolling available for the government should the need arise.

Appendix 1: Completed Ontario Highway Expansion Projects, 2016/17–2021/22

Source of data: Ministry of Transportation

Ministry's Project Description	Highway Number	Capital Construction Cost ($ million)
Central		
1. 407 East, Phase 2	407	984.33
2. Finch Avenue to Major Mackenzie Drive, Vaughan (P3 Project)	427	369.47[1]
3. Highway 401 to Queen Street, Mississauga	410	174.65
4. Credit River Bridge to Hurontario Street, Meadowvale Creek, Mississauga	401	117.04
5. Major Mackenzie Drive to Stouffville Road, Markham, Whitchurch-Stouffville	404	70.48
6. Highway 412 to Brock Street, Whitby	401	70.19
7. Work by others on Highway 427 and Highway 407 interchange	427	31.50
8. Major Mackenzie Drive, Markham	404	10.18
9. Sixth Line to Pretty River Parkway, Clearview	26	9.74
East		
10. Eagleson Road (Ottawa) westerly to Highway 7 interchange	417	93.99
11. Credit River 29 westerly to Campbell Drive, Arnprior Phase 1	17	76.01
12. Maitland Avenue to Island Park Drive, Ottawa	417	70.29
13. Montreal Street interchange to Cataraqui River	401	37.58
14. Campbell Drive to Scheel Drive, Arnprior Phase 2	17	35.07
Northeast		
15. North of Highway 607 northerly to north of French River, 2 lanes to 4 lanes	69	73.71
16. Sundridge to South River, new four-lane	11	67.48
17. Highway realignment at Virginiatown	66	27.04
18. Burk's Falls Bypass, municipal road improvements[2]	11	13.88
19. Highway 69 southerly, Shebeshekong Road	7182	3.74
Northwest		
20. Nipigon River Bridge and approaches	11	156.70
21. Stillwater Creek westerly to Red Rock Road Number 9, including Stillwater, South Trout and North Trout Creek Bridges	11	110.41
West		
22. Regional Road 8 (King Street) to Regional Road 24 (Hespeler Road), Cambridge	401	134.15
23. Fischer-Hallman Road to Courtland Avenue, Kitchener	7	110.28
24. Ojibway Parkway and Essex Terminal Railway overpass, Right Honourable Herb Gray Parkway, Windsor-Essex	401	36.20

Ministry's Project Description	Highway Number	Capital Construction Cost ($ million)
25. Victoria Street Bridge, Kitchener	85	25.50
26. Veterans Memorial Parkway, London	401	23.19
27. Highway 8 ramp, Fountain Street, Speedsville Road	401	21.19
28. Hanlon Expressway–Laird Road interchange, Guelph	6	19.30
29. Victoria Street Underpass, utility relocations	85	14.31
30. Shirley Avenue realignment, utility relocation	85	13.52
31. Franklin Boulevard, Cambridge	401	9.48
32. Oak Park Road, Brantford	403	7.03

1. The $369.47 million represents the capital construction cost only. The total Public-Private Partnership (P3) Project value is $773.53 million, which includes financing, Infrastructure Ontario fees, variations, post-contract contingency, as well as the 30-year concession costs (maintenance, lifecycle and operating).
2. Municipal road improvements associated with Highway four-lane 11 Expansion.

Appendix 2: Measures of Effectiveness to Assess Potential Transportation Projects

Source of data: Ministry of Transportation

Category		Measures of Effectiveness
Connected	1.	Average travel time for people
	2.	Average travel time for goods
	3.	Average transit travel time per trip
	4.	Share of passengers using transit to travel between sub-regions
	5.	Percentage of people and jobs in the region accessible by transit in under 45 minutes
	6.	Percentage of residents in the region living within 10-minute walk to high-frequency transit
	7.	Share of passengers using transit within the region
	8.	Percentage of people and jobs in the region accessible by the road network (no transit) within 45 minutes
	9.	Percentage of people and jobs accessible from goods movement centres
	10.	Percentage of people and jobs accessible by transit or cycling within 45 minutes from the rural areas
Integrated	11.	Average trip distance for all trips during peak times
	12.	Walking and cycling trips per capita
	13.	Percentage of jobs accessible in less than 45 minutes by road
	14.	Percentage of jobs accessible in less than 45 minutes by public transit
	15.	Percentage of jobs accessible in less than 45 minutes by walking or cycling
	16.	Percentage of truck trips originating or ending at intermodal hubs, ports, airports and border crossings that are less than 45 minutes long
Equitable	17.	Percentage of people and jobs accessible by public transit for low-income households within 45 minutes
	18.	Percentage of people and jobs accessible by public transit for youth within 45 minutes
	19.	Percentage of people accessible by public transit for seniors within 45 minutes
	20.	Cost of an average trip
	21.	Ratio of public transit to automobile travel time
	22.	Average travel time for residents in predominantly low-income areas
	23.	Percentage of low-income residents in the region living within 10-minute walk to high-frequency transit
	24.	Percentage of jobs accessible in less than 45 minutes by car for low-income households
	25.	Cost of an average trip for residents in predominantly low-income areas
	26.	Percentage of residents that can access a major hospital in less than 45 minutes by public transportation, cycling or walking
	27.	Percentage of residents that can access a post-secondary institution in less than 45 minutes by public transit, cycling or walking
	28.	Percentage of low-income residents that can access a major hospital in less than 45 minutes by public transit, cycling or walking

Category	Measures of Effectiveness
Environmentally Sustainable	29. Total tonnes of greenhouse gases emitted per year per capita
	30. Greenhouse gas intensity per vehicle kilometres travelled
	31. Route-km of new transportation corridors through environmentally protected countryside (e.g., Green Belt)
	32. Number of new or expanded transportation corridors crossing major waterway
	33. Route-km of new transportation corridors crossing agricultural lands
Economically Sustainable	34. High-level cost estimate
	35. Operating and maintenance costs per trip
Active, Safe and Healthy	36. Percentage of all trips involving walking or cycling
	37. Kilometres travelled by walking or cycling multiplied by the number of persons who made those trips
	38. Total nitrogen oxides and volatile organic compounds emissions
	39. Total particulate matter emissions
	40. Exposure to nitrogen oxides and volatile organic compounds per capita within 500 metres of an expressway and highway
	41. Exposure to particulate matter (PM 2.5) per capita within 500 metres of an expressway and highway
	42. Percentage increase in number of collisions compared to collisions projected for a business-as-usual scenario
Prosperous	43. Delay in truck travel times between intermodal hubs/ports/airports/ and gateways
	44. Percentage of people and jobs within 45-minute travel time to key business airports
	45. Average travel time to major employment areas from place of residence
	46. Percentage of residents that can access major employment areas in less than 45 minutes by vehicles or public transit
	47. Number of congested kilometres travelled by personal vehicles
	48. Congestion on transit lines in kilometres travelled multiplied by the numbers of persons who made those trips
	49. Congestion for trucks in kilometres travelled multiplied by the numbers of vehicles who made those trips
	50. Average commute time from place of residence
	51. Hours lost to congestion multiplied by the number of persons who made those trips
	52. Truck travel hours lost to congestion multiplied by the number of vehicles who made those trips
	53. Average travel time of trucks from border crossings to major freight generators and major distribution centres (ports, airports, etc.)

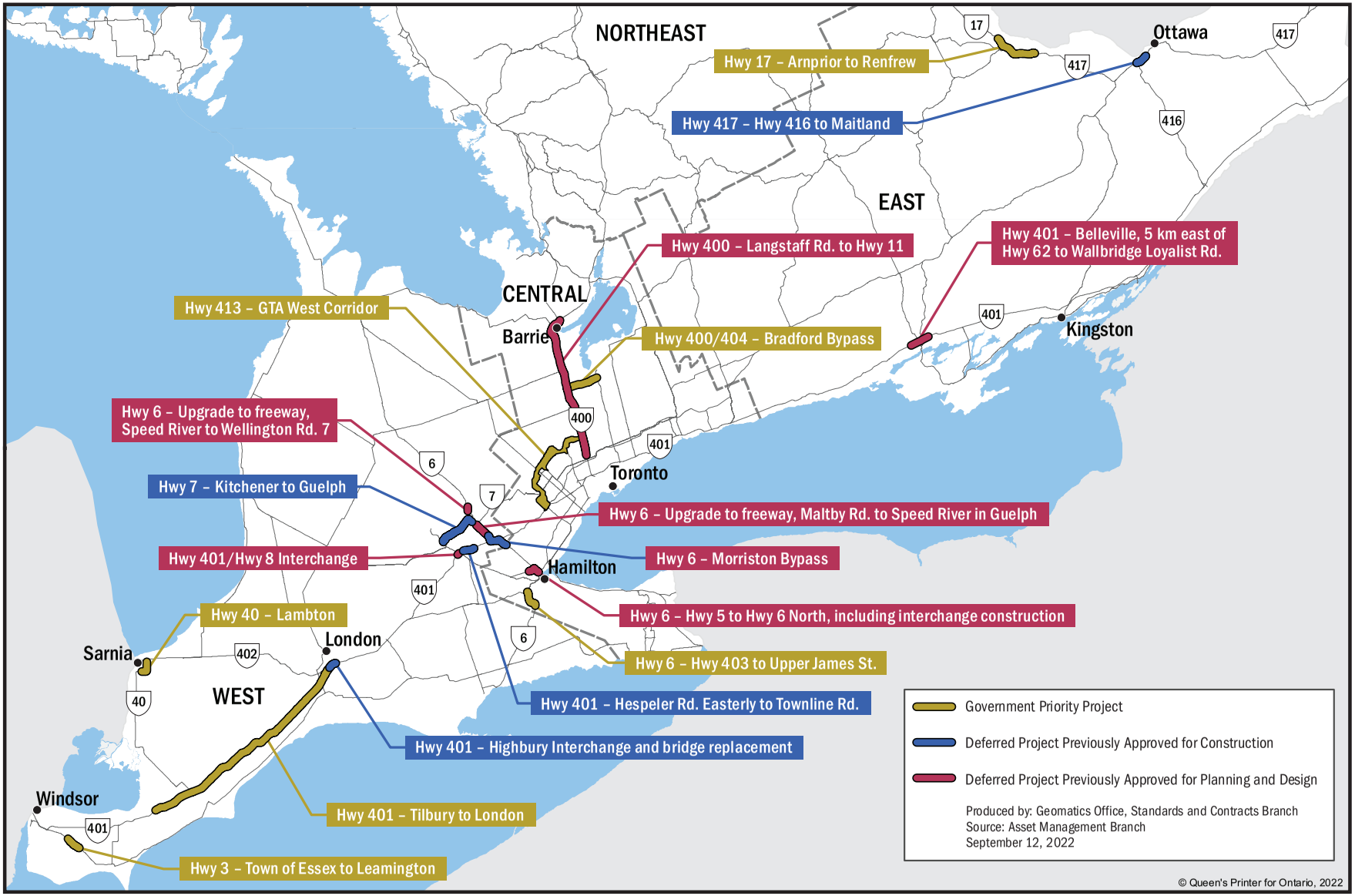
Appendix 3: Audit Criteria

Prepared by the Office of the Auditor General of Ontario

1.	Highway expansion projects are identified and prioritized based on provincial needs and with regard to economy and public safety.
2.	Highway rehabilitation needs are identified, prioritized, and addressed in a timely manner, and consider all relevant assets, public safety, economy and efficiency.
3.	Highway projects are managed in accordance with applicable legislation, regulations, and policies.
4.	Accurate, timely, and complete information on highway projects is regularly collected, recorded, and used by management to make informed decisions.
5.	Meaningful performance indicators and targets are established for highway planning and management and are publicly reported. Results are monitored, compared against targets, and timely corrective action is taken when issues are identified.

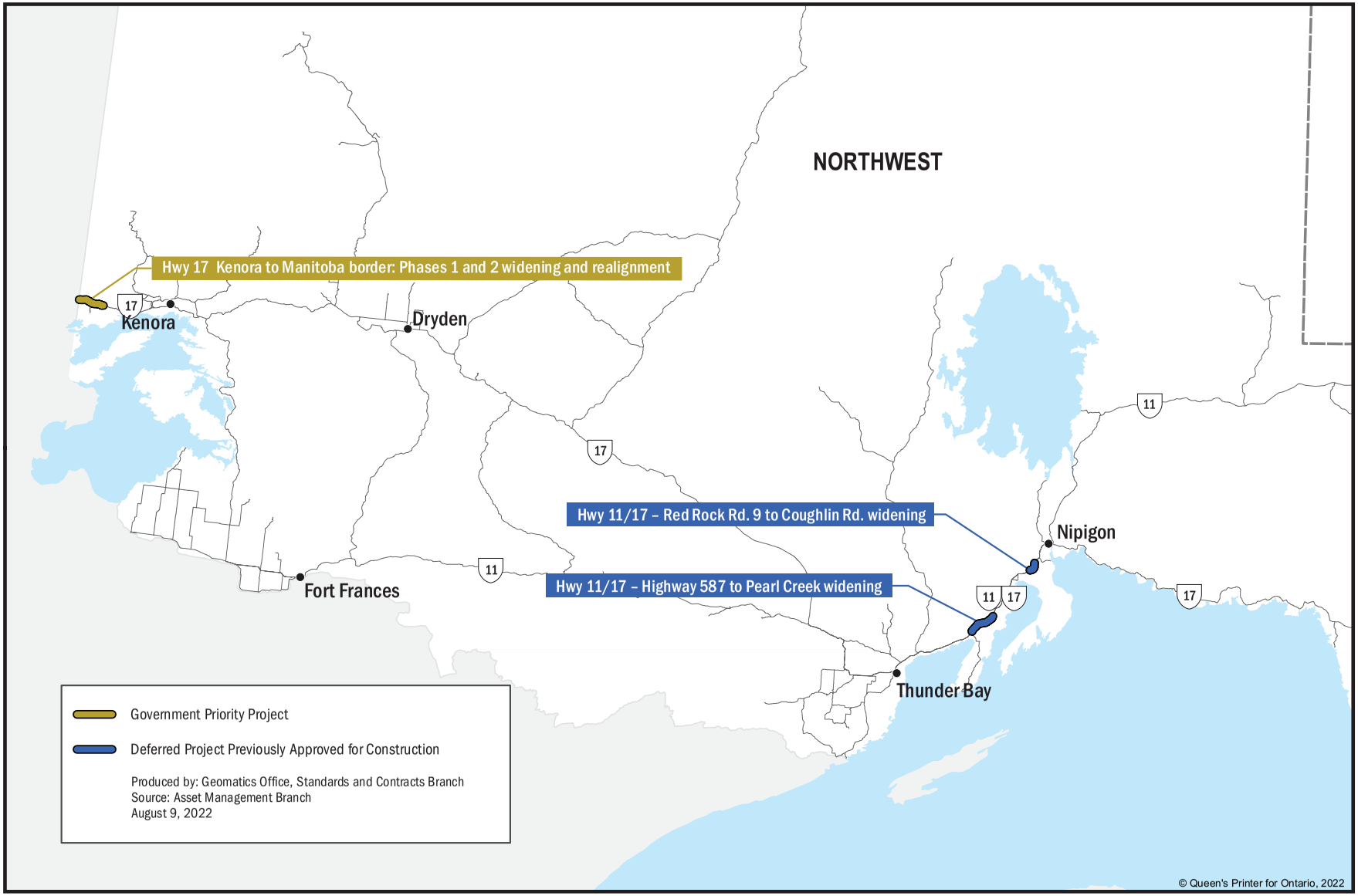
Appendix 4: Government Priority and Deferred Highway Projects in Southern Ontario, 2019/20–2021/22

Source of data: Ministry of Transportation



Appendix 5: Government Priority and Deferred Highway Projects in Northern Ontario, 2019/20–2021/22

Source: Ministry of Transportation



Office of the Auditor General of Ontario

20 Dundas Street West, Suite 1530
Toronto, Ontario
M5G 2C2

www.auditor.on.ca

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