



**GOLD**  
Project: **Eastmain-1 Development**  
Stage: **Operation**  
Date: **August 2023**

# Assessment Report

Project Name: Eastmain-1 Development



Operation

**Project Sponsor:** Hydro-Québec

**Report Authors:** Joerg Hartmann, Margaret Trias, Miles Scott-Brown

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**Cover page photo:** Eastmain-1 and Bernard-Landry powerhouses (©Photo Hydro-Québec)

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The findings in this report are based on an independent assessment conducted in compliance with the processes set out in the Hydropower Sustainability Assurance System.



## A. Assessment Details

Project sponsor	Hydro-Québec
Assessor(s)	Joerg Hartmann (Sustainable Water & Energy LLC), Margaret Trias (M. Trias Consulting Inc.), Miles Scott-Brown (Ciera Group)
Assessment objective	<ul style="list-style-type: none"> <li>• Compare, with the objective of continuous improvement, Hydro-Québec's practices to internationally recognized best sustainable practices in the hydropower sector.</li> <li>• Promote and gain recognition for the sustainability of Quebec's hydropower, both in Québec and in neighbouring markets.</li> </ul>
Assessment dates	Interviews May-September 2022, site visit September 12-20, 2022
Assessment report date	May 23, 2023
Observers	<p>The following observers participated in the site visit (September 12 – 16, 2022):</p> <p>Jian-hua Meng, Water Security Global Expert, WWF-International</p> <p>Steve Hamel, Urban Biodiversity Specialist, WWF-Canada</p> <p>Daniel Sosland, President, Acadia Center</p> <p>Sébastien Caron, Directeur général du Conseil Régional de l'Environnement de la Côte-Nord</p>
Prepared for	Hydro-Québec
Limitations of the assessment	<p>The James Bay hydropower complex is a very large system with a total installed capacity of 16,527 MW, almost half of Hydro-Québec's generating capacity. Only the southernmost part of the complex is within the scope of this assessment: a) the Eastmain 1 reservoir (renamed Reservoir de la Paix des Braves in 2019) with its 2 powerhouses Eastmain-1 (EM-1) and Eastmain-1A (EM-1A, renamed Bernard-Landry in 2019), and b) the Rupert Diversion, a diversion of the Rupert River through two bays into the Eastmain reservoir. This includes all infrastructure in this area built between 2002 (the date of the underlying "Peace of the Braves" Agreement with the Cree nation) and 2012 (commissioning of the Bernard-Landry power station), during the latest phase of the expansion of the James Bay complex. While the official name is 'Eastmain-1 Development', for simplicity and to avoid confusion with the EM-1 power station, it will be called the Eastmain Complex in this assessment. It also includes the reduced flow reaches downstream of the Rupert River diversion to the mouth of the Rupert River.</p> <p>After passing through the Eastmain powerhouses, significant parts of the flows of the Eastmain and Rupert Rivers are diverted north to a series of other reservoirs, rivers and powerhouses, before reaching the James Bay (the southern part of the Hudson Bay) at the mouth of the La Grande River. Only the first section of this diversion, the reach of the Eastmain River between the EM-1 and Bernard-Landry power stations and the first reservoir downstream (Opinaca), is included in the scope of this assessment.</p>

The Eastmain River, downstream of the EM-1 and Bernard-Landry power stations, was already diverted in the 1980's, and hence the resulting effects on flows are not included in the scope. The Sarcelle powerhouse at the outlet of the Opinaca reservoir is also not included in the scope (although it was authorized and built concurrently with EM-1a (Bernard-Landry) and the Rupert diversion). The reason for these limitations is simply that the Hydropower Sustainability Standard is not designed for the assessment of complex cascade systems, such as the James Bay complex in its entirety. The previous expansion phases are seen as part of the baseline situation in the year 2002. A number of cumulative impacts between the previous and the latest expansion phases are addressed in this report.



## B. Project Details

Project name	Eastmain-1 Development
Country	Canada
Location	North-western Québec, on the Rupert and Eastmain Rivers which flow in a westerly direction into the James Bay
Purpose	Hydropower generation
Developer / Owner	Hydro-Québec
Financer(s)	Bond market
Installed capacity (MW)	EM-1 (480 MW), Bernard-Landry (768 MW), total 1,248 MW
Construction start date (actual)	EM-1 (2002), Bernard-Landry (2007)
Commercial operations date (actual)	EM-1 (2006), Bernard-Landry (2012)
Annual average generation (GWh / year)	Combined total EM-1 and Bernard-Landry generation is 4,979 GWh/year (annual average 2011-2021). Several other large power stations downstream in the cascade receive additional flows from the diversions of the Rupert and Eastmain Rivers but are not included in the scope of this assessment, and hence their additional generation is not counted here.
Associated infrastructure: road(s) (length)	Roads linking Eastmain complex to the Route du Nord: 67 km (named Route de l'Eastmain-1) and 88 km (named Route de la Sarcelle/Muskeg), plus temporary and secondary roads.
Transmission lines and sub-stations (names, lengths and capacities)	EM-1: 315 kv line EM-1 to Nemiscau substation Bernard-Landry/Rupert: 1 km 315 kv line to connect to EM-1 substation; 76.4 km of 735 kv line to dismantle, 104 km of 735 kv line to rebuild
Total cost (USD Mm)	EM-1: CAD 2.43 billion; Bernard-Landry: CAD 1.43 billion; Rupert diversion: CAD 2.71 billion
Annual operating costs (USD m)	Not available or confidential
Project development cost not including transmission (USD m)	Not available or confidential
Transmission costs for project development (USD m)	Not available or confidential
Specific investment cost (USD m / MW)	Not available or confidential
Levelised energy cost (USD / kWh)	Not available or confidential
Dam type	A rockfill dam on Eastmain River and 29 dikes create the Eastmain reservoir. 4 dams of different types on the Rupert, Lemare and Nemiscau rivers as well as 73 dikes create the Rupert bays.
Dam height (m)	Eastmain 73 m, Rupert 47 m, Lemare 24 m, Nemiscau-1 16m, Nemiscau-2 19 m
Dam length at crest (m)	Eastmain 856 m, Rupert 475 m, Lemare 558 m, Nemiscau-1 336 m, Nemiscau-2 271 m
Units (number, type, MW)	EM-1: 3 x 160 MW Francis, Bernard-Landry 3 x 260 MW Francis
Reservoir area at Full Supply Level (FSL) (km <sup>2</sup> )	Eastmain 603 km <sup>2</sup> , Rupert bays 346 km <sup>2</sup> , total 949 km <sup>2</sup>

Average net head at FSL (m)	63 m
Average flow (m <sup>3</sup> / s)	1,019 m <sup>3</sup> /s (at dam site, including flows from Eastmain and Rupert rivers)
Design flow (m <sup>3</sup> / s)	EM-1: 840 m <sup>3</sup> /s, EM-1a: 1,344 m <sup>3</sup> /s
Load factor	52%
Number of physically displaced households	None
Power density (W / m <sup>2</sup> )	1.3 (including both Eastmain reservoir and Rupert diversion bays)
Emissions intensity (gCO <sub>2</sub> e / kWh)	-7.7 (negative value)
Contacts / website	<a href="https://www.hydroQuebec.com/about/">https://www.hydroQuebec.com/about/</a>

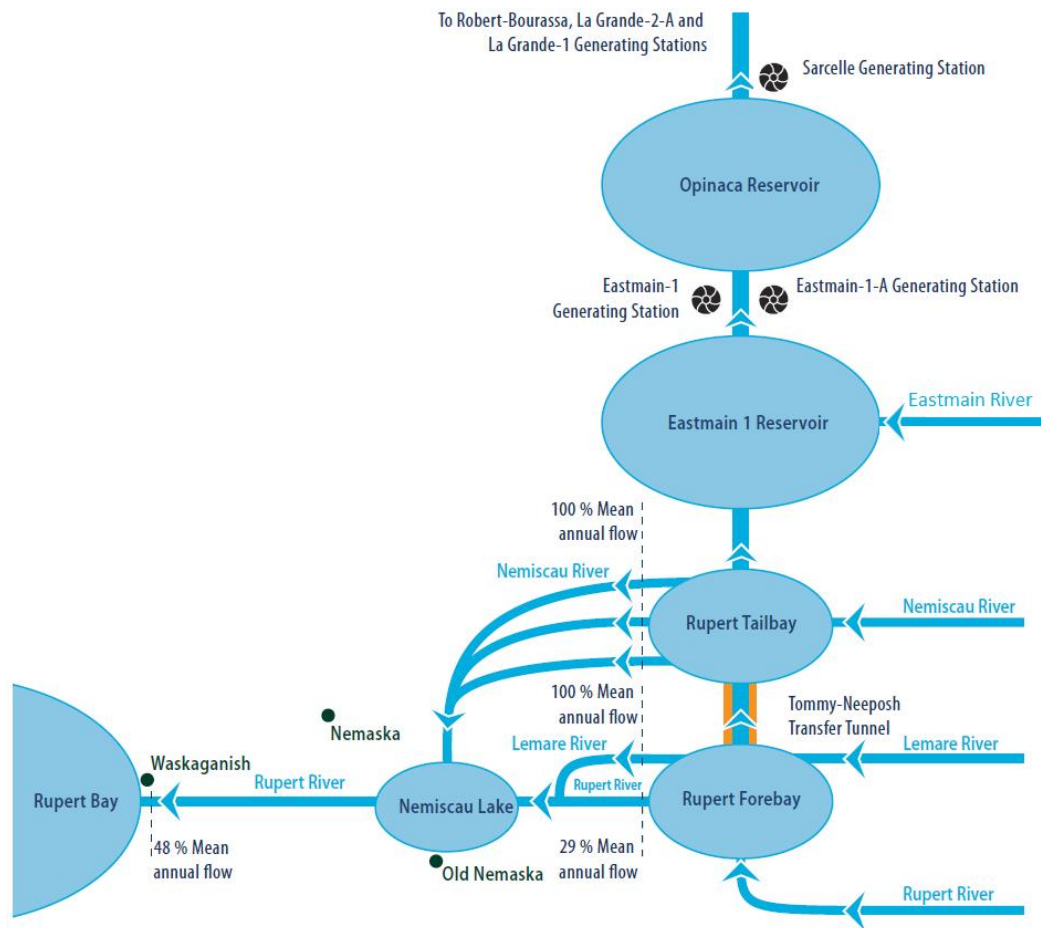


Figure 1 – Diagram of the Eastmain Hydropower Complex. The diversion of the Eastmain River northwards through Opinaca reservoir into the Robert-Bourassa-Reservoir was built earlier. The focus of this assessment is the infrastructure from the period between 2002 and 2012, when the Eastmain reservoir including its two power stations was built, and the Rupert River was diverted into the Eastmain reservoir. The Sarcelle powerhouse is not within the scope. The increased flows downstream of the Eastmain reservoir are within the scope.

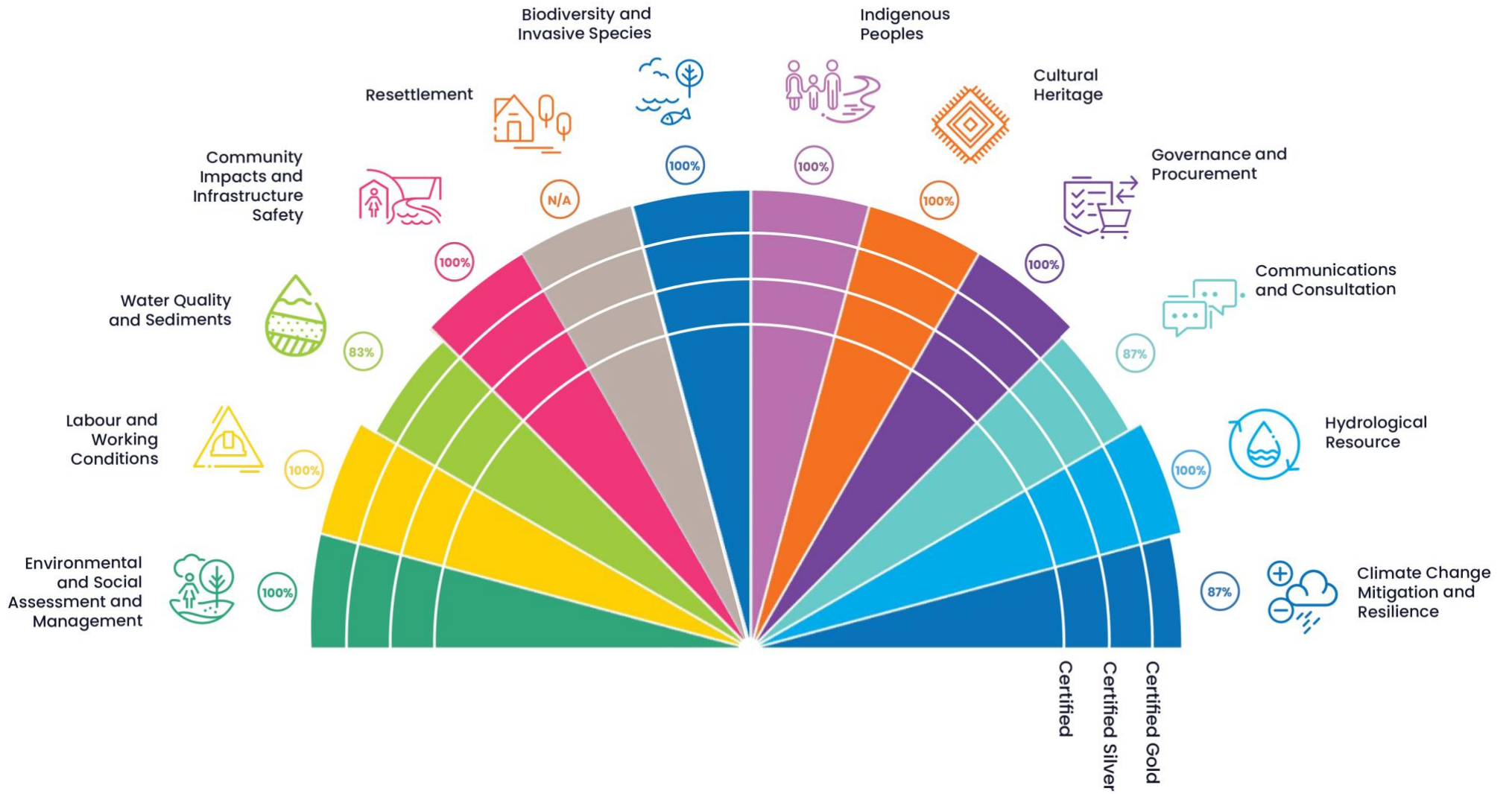


Project location

Figure 2 – Map of project area showing natural waterbodies, reservoirs and waterways, roads, power stations and the community of Nemaska, the closest permanent human settlement to the Eastmain hydropower complex.



# C. Results Diagram



Operation

## D. Minimum Requirements

There are no significant gaps against the Minimum Requirements.

List of significant gaps against Minimum Requirements	Sections											
	1. Environmental and Social Assessment and Management	2. Labour and Working Conditions	3. Water Quality and Sediments	4. Community Impacts and Infrastructure Safety	5. Resettlement	6. Biodiversity and Invasive Species	7. Indigenous Peoples	8. Cultural Heritage	9. Governance and Procurement	10. Communications and Consultation	11. Hydrological Resource	12. Climate Change Mitigation and Resilience
NUMBER OF MINIMUM REQUIREMENTS BY SECTION	12	10	14	35	11	8	9	7	14	28	24	21
NUMBER OF MINIMUM REQUIREMENTS MET	12	10	14	35	NR	8	9	7	14	28	24	21
NUMBER OF SIGNIFICANT GAPS BY SECTION:	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL NUMBER OF SIGNIFICANT GAPS:	0											

## E. Advanced Requirements

	Topics											
	1. Environmental and Social Assessment and Management	2. Labour and Working Conditions	3. Water Quality and Sediments	4. Community Impacts and Infrastructure Safety	5. Resettlement	6. Biodiversity and Invasive Species	7. Indigenous Peoples	8. Cultural Heritage	9. Governance and Procurement	10. Communications and Consultation	11. Hydrological Resource	12. Climate Change Mitigation and Resilience
TOTAL NUMBER OF REQUIREMENTS	6	5	11	21	5	6	8	5	6	15 <sup>1</sup>	16	15
NUMBER OF REQUIREMENTS MET	6	5	9	21	Not relevant	6	8	5	6	13	16	13
PERCENTAGE OF REQUIREMENTS MET	100%	100%	82%	100%	Not relevant	100%	100%	100%	100%	87%	100%	87%
PROPOSED CERTIFICATION LEVEL	Gold											

### Note:

- A project must meet all Minimum Requirements on all relevant sections to achieve HS Certified label.
- To receive the HS Silver label, projects must meet at least 30% of the Advanced Requirements on each relevant section.
- To receive the HS Gold label, projects must meet at least 60% of the Advanced Requirements on each relevant section.

<sup>1</sup> One of the standard requirements (on resettlement) is not applicable, thus the total number of requirements has been reduced by one.

# 1 Environmental and Social Assessment and Management



Scope and Principle	
<p>This section addresses the plans and processes for environmental and social issues management. The principle is that negative environmental and social impacts associated with the hydropower facility are managed; avoidance, minimisation, mitigation, compensation and enhancement measures are implemented; and environmental and social commitments are fulfilled.</p>	
Background	
Identify the main environmental and social issues during operation	The main impacts of the project relate to reduced flow in the Rupert River, aquatic fauna and navigation, terrestrial biodiversity, landscapes and traditional Cree use of the land and waters in the project's area of influence.
Identify the environmental regulator	<ul style="list-style-type: none"> <li>• Provincial: Ministère de l'Environnement et de la Lutte contre les changements climatiques de la Faune et des Parcs</li> <li>• Federal: Department of Fisheries and Oceans, Environment Climate Change Canada (ECCC), Canadian Environmental Assessment Agency (part of ECCC)</li> <li>• COMEX - Environmental and Social Impact Review Committee: independent standing body composed of members appointed by the governments of Québec, of Canada and of the Cree Nation, responsible for the assessment and review of projects located south of the 55th parallel in the territory governed by the James Bay and Northern Quebec Agreement (JBNQA)</li> </ul>
Identify other regulators (e.g. on land, water use, Indigenous Peoples)	<ul style="list-style-type: none"> <li>• James Bay and Northern Quebec Agreement (JBNQA)</li> <li>• Provincial: Secrétariat aux affaires autochtones</li> <li>• Federal:                             <ul style="list-style-type: none"> <li>○ Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)</li> <li>○ Transport Canada (navigable waters)</li> </ul> </li> </ul>
Summarise the ESIA regulatory requirements	<p>Because the Eastmain 1 (EM-1) project was planned in the JBNQA, it did not require a full Environmental Assessment under the LQE. Nonetheless, HQ's feasibility study report ("<i>Aménagement Hydroélectrique d'Eastmain 1, Rapport d'avant-projet</i>", 1991) included an environmental and social impact assessment for the project. It was submitted to the Ministry of Energy and Natural Resources and the Ministry of Environment of Québec, to obtain the governmental Decree that authorized the implementation of the project. The EM-1 project received the</p>



	<p>Decree from the Québec government in 1993, and consent from the Cree in 2002, prior to the construction of the EM-1 power station.</p> <p>A formal environmental assessment process was carried out for the Eastmain 1A-Sarcelle-Rupert (EM-1A-S-R) project, subject to the Agreement Concerning the Environmental Assessments of the EM-1-A-S-R Project. Under this agreement between the Government of Canada, the Government of Québec and the Cree Regional Authority, the Review Committee (COMEX) and the Federal Environmental Assessment Review Panel had to co-ordinate and align the assessment and review processes, to prevent duplication and overlap. For this second phase of the development, Hydro-Québec prepared an EIA in 2004 and the COMEX and Federal Review Panel reports were issued in 2006.</p> <p>Furthermore, for the first time in Québec, the project was subject to a Public Hearing by the COMEX at the end of the construction phase to obtain feedback from the Cree communities on the effectiveness of mitigation measures.</p>
Describe the non-physical cultural heritage in the project area	Traditional Cree culture including hunting, fishing and trapping activities (addressed in section 7).
Other relevant information	Government authorisations for EM-1A-S-R were received in 2006-2007 and included the obligation to integrate the EM-1 environmental monitoring programme into the EM-1A-S-R monitoring/follow-up programme. EM-1 was constructed between 2002 and 2006, and EM-1A-S-R were constructed immediately afterwards between 2007-2013.

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
<b>Assessment</b>			
Systematic processes are in place to identify any ongoing or emerging environmental and social issues associated with the operating hydropower facility	✓ A detailed environmental and social monitoring programme for the construction and operation period spanning 2007-2023 was developed and implemented to fulfil the commitments made by Hydro-Québec in the environmental assessments, to meet the conditions of the certificate of authorisation and to fulfil the	Processes to identify ongoing and emerging environmental and social issues take into account broad considerations, and both risks and opportunities	✓ Ongoing communication and consultation between the Cree communities and Hydro-Québec is achieved through the MC, the Rupert River Water Management Board, Niskamoon Corporation, and other ongoing consultation activities. These mechanisms have led to the identification of emerging risks and

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
	<p>conditions stipulated by the federal entities. The monitoring or follow-up programmes cover the physical, aquatic, terrestrial and social environments affected by the complex.</p> <p>The monitoring programme has been overseen by a Monitoring Committee (MC) comprising 15 members (8 Cree and 7 from Hydro-Québec) that meet approximately 10 times per year to discuss results of the ongoing follow-up studies and performance of mitigation measures. The MC reviews the terms of reference for environmental studies, approves the selection of consultants, and reviews all environmental monitoring reports and reporting that must be submitted to the regulator. The ongoing follow-up programme and the MC provide a structure that allows the identification of emerging issues in a timely manner.</p>		<p>opportunities throughout the implementation and the ongoing monitoring/follow-up period. A focus on adaptive management and a relatively close stakeholder relationship allows emerging issues to be addressed in a timely manner and opportunities to be realised. The only other significant infrastructure and industrial activities in the project area are related to a growing number of mines; while Hydro-Québec is aware of these, no cumulative impacts have been identified so far.</p>
The processes utilise appropriate expertise	✓		
Monitoring programmes are in place for identified issues	✓		

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)	Findings and Observations		Requirement is met: yes (✓) or no (✗)	Findings and Observations	
<b>Management</b>					
Environmental and social management system is in place to manage measures to address identified environmental and social issues	✓	Hydro-Québec has a well-developed corporate environmental and social management system that addresses all aspects of the business. In addition, the day to day environmental and social management of the Eastmain complex during the operations phase is overseen by Hydro-Quebec's generation group and includes monitoring of physical and human environments, fish habitat, terrestrial and semi-aquatic habitats, birds and flora. A permanently staffed environmental office is located in the Eastmain camp, and social liaison officers are placed in towns nearby. Monitoring programs are typically carried out by contractors and involve Cree staff.	Processes are in place to anticipate and respond to emerging risks and opportunities	✓	Processes include the ongoing monitoring and follow-up studies, coordination and communication with the MC and the Rupert River Water Management Board (RRWMB), established to manage any ongoing and emerging environmental or social issues once the MC is dissolved, when the follow-up programme is completed in 2023 (although the monitoring programme is scheduled to end in 2023, it is expected that some monitoring activities will continue).  In addition, potential emerging cumulative impacts on eelgrass in James Bay related to the larger La Grande hydropower complex have been identified and are currently being studied under the guidance of a joint Cree-Hydro-Québec Steering Committee and with universities across Canada.
This management system is implemented utilising appropriate expertise (internal and external)	✓	Internal and external experts are used to implement environmental and social management and monitoring activities.	Plans and processes are embedded within an internationally recognised environmental management system which is third party verified, such as ISO 14001	✓	Hydro-Québec is certified under the following international management standards: ISO 14001, ISO 37001 and ISO 9001.
<b>Conformance and Compliance</b>					

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
Processes and objectives in environmental and social management plans have been and are on track to be met with:			There are no non-compliances	✓	There are no non-compliances. Any specific minor non-compliance that has presented itself in the past has been resolved in a timely manner.
• no major non-compliances	✓	No major non-compliances have been identified.			
• no major non-conformances	✓	No major non-conformances have been identified.			
Environmental and social commitments have been or are on track to be met	✓	Environmental and social commitments have been and continue to be met. The RRWMB does not have a fixed term and will continue to exist in perpetuity to address any issues that arise.	There are no non-conformances	✓	There are no non-conformances.
Environmental and social funding commitments have been or are on track to be met	✓	Funding commitments for environmental and social commitments are being met and funding to address emerging issues is available through different funds for as long as the Eastmain complex will be in operation.			
Outcomes					
Negative environmental and social impacts associated with hydropower facility operations are avoided, minimised and mitigated	✓	Environmental and social impacts have been and continue to be avoided, minimised, mitigated and compensated.	Negative environmental and social impacts associated with hydropower facility operations are avoided, minimised, mitigated and compensated	✓	Hydro-Quebec has implemented or is on track to implement all mitigation and compensation measures required under the permits and the agreements with the Cree, as well as a number of voluntary mitigation measures beyond regulatory requirements and conditions of authorizations (e.g., additional fish spawning habitat, additional fish passages, continuous real-time GHG testing of turbined water at the powerhouse, contribution
Land disturbance associated with development of the hydropower project is rehabilitated or mitigated	✓	Land disturbance has been rehabilitated or mitigated since the construction of the Eastmain complex.			
The operating hydropower facility or the corporate entity to which it belongs can pay for	✓	Funding commitments for environmental and social commitments are being met and			

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
social and environmental commitments	funding to address emerging issues is available from Hydro-Quebec and Niskamoon Corporation (see section 7).		to a significant number of scientific studies).

List of significant gaps against <b>Minimum Requirements</b>	Number of <b>Advanced Requirements</b> met
None	6

Summary of findings and other notable issues
The environmental and social impacts of the Eastmain complex have been assessed and are being managed through comprehensive programmes. Emerging issues are being identified through monitoring, in close collaboration with the Cree communities. A number of voluntary management measures, beyond regulatory requirements, have been implemented. E&S management is systematic and certified against ISO 14001. No non-compliances or non-conformities have been identified.

Relevant evidence	
Interview	1-9, 16, 19, 21, 27, 28, 32, 35-39, 41, 45, 46
Document	1-32, and documents listed in sections 3, 4, 6, 7, 8
Photo	1-7, 9, 11, 12, 18, 22, 36, 38, 39, 55, 56, 63, 65, 66, 73-83, 85-95, 97, 102, 104-107, 116, 117, 119, 120, 129, 136, 137

## 2 Labour and Working Conditions



Scope and Principle	
This section addresses labour and working conditions, including employee and contractor opportunity, equity, diversity, health and safety. The principle is that workers are treated fairly and protected.	

Background	
Labour requirements during operation (full-time equivalent)	<p>As of year-end 2021, Hydro-Québec had 21,168 permanent and temporary employees, an increase of 5.8% compared to 2020. At the time of the assessment, a total of 63 FTE employees are working at the Eastmain complex of which 8 employees are Cree, down from 14 in 2017. The average age of the workforce (2021) was 44.5 years.</p> <p>83% of the Hydro-Québec workforce is unionized (7 unions) and eight collective agreements are in place that set out working conditions and provide mechanisms for dealing with grievances and disagreements.</p>
Applicable key human resources regulations	<p>In Québec, working conditions are governed by Provincial Regulation Chapter N-1.1 Act Respecting Labour Standards (<a href="https://www.legisquebec.gouv.qc.ca/en/document/cs/n-1.1">https://www.legisquebec.gouv.qc.ca/en/document/cs/n-1.1</a>).</p> <p>A-2.01 - Act respecting equal access to employment in public bodies establishes a special framework to provide equal access to employment groups discriminated against in employment, namely women, disabled persons, aboriginal peoples, and visible and ethnic minorities. <a href="https://www.legisquebec.gouv.qc.ca/en/document/cs/A-2.01">https://www.legisquebec.gouv.qc.ca/en/document/cs/A-2.01</a></p>
Applicable key occupational health and safety (OH&S) regulations	<p>In Québec, occupational health and safety (OH&amp;S) regulations are governed by Provincial regulation S-2.1 - Act Respecting Occupational Health and Safety (<a href="https://www.legisquebec.gouv.qc.ca/en/document/cs/s-2.1">https://www.legisquebec.gouv.qc.ca/en/document/cs/s-2.1</a>).</p>
Identify the regulator for labour law and OH&S	<p>The regulator for labour law and OH&amp;S in Quebec is the Ministry of Labour (<i>Ministère du Travail, de l'Emploi et de la Solidarité Sociale</i>).</p>
Other relevant information	<p>In 2018, Hydro-Québec joined the United Nations Global Compact and pledged to communicate progress regarding the Compact's Ten Principles, including labour standards. Hydro-Québec is also working towards meeting the requirements of seven United Nations Sustainable Development Goals (SDGs), including Goal 8 Decent Work and Economic Growth.</p>

	In 2021, the Distribution, Procurement and Shared Services Group of Hydro-Québec received a Platinum Excellence, Innovation and Wellness award by Excellence Canada, which includes criteria regarding <i>“the way people are treated, encouraged, supported and enabled to contribute to the organization’s overall success. It includes the safety and wellness of employees and their families – across both physical and psychological dimensions.”</i>
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Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
<b>Assessment</b>			
<p>A periodically updated assessment has been undertaken of human resource and labour management requirements for the operating facility</p>	<p>✓</p> <p>All human resource and labour management requirements are assessed and managed through Hydro-Québec corporate processes rather than at the operating facility level.</p> <p>The Eastmain complex is in a remote location and all workers fly in and out of the camp on an 8 day on, 6 days off basis (rotation on a Wednesday to Wednesday turnaround). Daily working hours for most staff are from 7:00 AM to 5:30 PM. Workers receive additional remuneration and benefits for working in remote locations such as Eastmain.</p> <p>Hydro-Québec provides a high-quality camp experience at the Eastmain complex complete with full meal, individual accommodations, and a large and diverse recreational facility. Meal quality is excellent and special dinners are provided monthly in a separate dining room, apart from the cafeteria. There are multiple</p>	<p>Identification of ongoing or emerging labour management issues takes broad considerations into account, and both risks and opportunities</p>	<p>✓</p> <p>A Vice-President, Talent and Culture was established in 2022 as part of a corporate restructuring process. The VP Talent and Culture is responsible for implementing strategies for human resource planning, skills development, and the creation of a talent pool to meet the company’s current and future needs and oversees initiatives to improve the employee experience and foster an inclusive, engaging workplace.</p> <p>At the level of the Eastmain facility, a number of risks and opportunities have been identified and addressed. Cree workers have been provided skills training through the Niskamoon Corporation to work as technicians at the Eastmain complex. Hydro-Québec aims to offer Cree workers the ability to balance traditional lifestyles while meeting facility work requirements. They are allowed to bring their families to the work camp for one week per</p>

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
	opportunities and equipment for outdoor activities. Fire and medical services are available, and the health Status of employees is monitored.		year and can take vacations during hunting seasons. Workers are offered employee assistance and a variety of counselling programs, including specific programs for mental health and for the integration of Cree workers and female staff. The work camp has boats, fishing equipment and a fish house available where workers can process and vacuum pack their fish to bring back home. Contractor staff (e.g., those employed by the catering company at the camp) have similar conditions to Hydro-Québec staff.
The assessment included project occupational health and safety issues, risks, and management measures	✓ At the operating facility level, the Operations Manager works with an HS Advisor who reports to the Hydro-Québec management team responsible for health and safety.  As a result of ongoing assessments, Hydro-Québec instituted a new workplace safety code for power plants as of July 2022.		
Monitoring is being undertaken to assess if management measures are effective	✓ Reporting of OHS performance is through the Power B1 system which is real time performance monitoring of OHS statistics.		
Ongoing or emerging labour management issues have been identified	✓ The Human Resources Committee of the Board of Directors identifies labour management issues and has a mandate for establishing and overseeing the implementing of human resources policies.  Improving diversity is a target of the Sustainable Development Plan. As of 2021 representation of target groups was as follows: women (28.5%), indigenous peoples (1.6%), ethnic minorities (2%), visible minorities (7.7%) and the disabled (0.7%). The percentage of women in supervisory		



Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
	management positions was stagnant at 18%.		
Management			
Human resource and labour management policies, plans and processes are in place to address all labour management planning components	<p>✓</p> <p>4 out of 12 strategic priorities in Hydro-Québec’s Sustainable Development Plan 2020–2024 are related to labour.</p> <p>Hydro-Québec’s human resources policy outlines corporate commitments to occupational health and safety, employee commitment, availability of talent, performance in all activities, and working conditions and labour relations. It also establishes employee requirements to meet these commitments.</p> <p>The 2018 Statement on Inclusion and Diversity states that Hydro-Québec aspires to <i>“a culture that brings together competent resources from all groups in society to enrich our workplace and contribute to providing world-class service to our customers”</i>.</p> <p>These policies are operationalized through a comprehensive set of plans and processes.</p>	Processes are in place to anticipate and respond to emerging risks and opportunities	<p>✓</p> <p>Hydro-Québec has put in place several initiatives to foster diversity and inclusion in the workplace. In 2021, management established an Equity, Diversion and Inclusion Unit to support underrepresented groups in the company.</p> <p>A 2021-2022 Disability Action Plan is in place to promote the integration and continued employment of people with disabilities including use of a specialized disability consultant to implement integration initiatives and to ensure that all necessary accommodation and equipment measures are in place.</p> <p>Ten to fifteen percent of the Hydro Québec unionized workforce are women and the union is working to increase opportunities for women which - along with increasing the participation of new immigrants - is part of the diversity program.</p>
Human resource and labour management policies, plans and processes of contractors, subcontractors and intermediaries are in place	<p>✓</p> <p>In Hydro-Québec’s Sustainable Development Plan 2020–2024, ‘doing business with responsible suppliers’ is listed as a key contribution to labour</p>		<p>In terms of the inclusion of women at the corporate level, in 2021 the representation of women employees in middle and senior management achieved 40%. Over 200 female</p>

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
		<p>rights and safe and secure working environments.</p> <p>Since March 2022, Hydro-Quebec is using the Cognibox platform and services to establish and manage new occupational health and safety and sustainable development criteria to improve its tender process.</p> <p>The contract will allow Hydro Québec to develop and promote best practices in occupational health and safety and sustainable development to make its supply chain safer and more responsible.</p>			<p>employees have completed the Effet A leadership program.</p> <p>Since the onset of COVID-19 there is more flexibility in the workplace and key elements such as health and safety are implemented in the collective union agreements.</p> <p>In relation to health and safety, Hydro Québec plans to obtain ISO 45001:2018 health and safety certification by 2025.</p>
<b>Conformance and Compliance</b>					
Processes and objectives relating to human resource and labour management have been and are on track to be met with:			There are no non-compliances	✓	There are no indications for non-compliances.
• no major non-compliances	✓	There are no indications for any major non-compliances.			
• no major non-conformances	✓	There are no indications for any major non-compliances.			
Any labour related commitments have been or are on track to be met	✓	All labour related commitments have been met or are on track.	There are no non-conformances	✓	There are no indications for non-conformances.
<b>Outcomes</b>					
There are no identified inconsistencies of labour management policies, plans and practices with internationally recognised labour rights	✓	No inconsistencies have been identified. Hydro-Québec was ranked by Forbes as Canada’s best employer in 2022 for the second year in a row.	Labour management policies, plans and practices are demonstrated to be consistent with internationally recognised labour rights	✓	The Government of Canada has ratified most ILO conventions and there is a comprehensive legal and regulatory system at the national and provincial levels to protect labour rights. Hydro-Québec regularly reports on

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
			labour rights and complies with labour laws and ILO occupational health and safety requirements.

List of significant gaps against <b>Minimum Requirements</b>	Number of <b>Advanced Requirements</b> met
None	5

Summary of findings and other notable issues
Hydro-Québec is a recognized leader in its sector in labour and working conditions, and fostering a safe, inclusive, and healthy working environment.

Relevant evidence	
Interview	9, 17, 18, 24, 35, 43
Document	28, 31, 34-59
Photo	7, 8, 11-30, 32, 34, 35, 37



### 3 Water Quality and Sediments

#### Scope and Principle

This section addresses the management of water quality, erosion and sedimentation issues associated with the operating hydropower facility. The principle is that water quality in the vicinity of the operating hydropower facility is not adversely impacted by activities of the operator, that erosion and sedimentation caused by the project are managed responsibly and do not present problems with respect to other social, environmental and economic objectives, and that commitments to address water quality, erosion and sedimentation issues are fulfilled.

#### Background

##### Water Quality

Description of water quality	Water quality in the Eastmain, Rupert and neighbouring river systems is considered very good and is characterised by low nutrient and organic matter content, low turbidity and low mineralisation.
Key water quality issues	<p>The changes observed in the surface water quality of the Rupert River correspond to what was expected in the environmental impact study. There are currently no surface water quality issues in the Rupert and Eastmain River systems, based on parameters being monitored. However, there have been instances of reduced confidence in drinking water quality among some land users, when scooped directly from the Rupert River diversion bays and river. These perception issues have been discussed with the Cree communities at Monitoring Committee meetings. People are advised by the Cree Board of Health to boil any surface water before drinking.</p> <p>Lower flows as a result of the Rupert River diversion have required a new intake for the Waskaganish water treatment plant. All communities in the region are equipped with water treatment plants.</p>
Main influences on water quality	Turbidity and total suspended solids are influenced by seasonal flow regimes. There is currently very limited anthropogenic influence in the Eastmain and Rupert River watersheds other than Hydro-Québec's activities, although there is some mining activity in the upstream catchment areas.

##### Sedimentology

Key sediment issues	Localized riverbank sections, especially exposed to long fetches, are subject to erosive processes such as, undercutting, exposed root systems, etc. Some composed of thick silty clays are also subject to landslides. However, impacts of
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	the Eastmain complex on riverbank erosion and sediment dynamics are considered minor.
Sediment load (tonnes/year)	Sediment load in the Rupert River as reported in the EIA (2004) increases as it flows towards James Bay: <ul style="list-style-type: none"> <li>• at km 314 (from the mouth of the river): 88,000 tonnes/year</li> <li>• at km 108.5: 125,000 tonnes/year</li> <li>• at km 0: 210,000 tonnes/year</li> </ul>
Catchment area at the dam	Catchment area of the Eastmain-1 dam, before the Rupert diversion: 27,180 km <sup>2</sup> Catchment area at the Rupert River diversion dam: 29,600 km <sup>2</sup>

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
<b>Assessment</b>			
Ongoing or emerging issues have been identified in the following areas:			
• water quality	✓ An assessment of water quality issues has been included in the environmental assessment processes for both project phases, and surface water quality was monitored throughout the affected river systems until 2017.		There are several examples of emerging issues being addressed and examples of voluntary measures put in place to make improvements beyond mitigating impacts (e.g., new water treatment plant (WTP) at Waskaganish, real-time GHG analyses in turbined water at the powerhouse).
• erosion and sedimentation	✓ A detailed assessment of sediment dynamics and erosion processes in the affected river systems and their tributaries was included in the environmental assessments and updated bathymetry of areas at risk is part of the monitoring/follow-up programme. In addition, a detailed assessment of the sensitivity to erosion of the different shoreline and bank sections of the complex has been carried out and these areas are monitored over time.	Identification of ongoing or emerging water quality issues takes into account both risks and opportunities	✗ Surface water quality was identified early on as being of particular concern to communities, and issues related to the perception of communities with regards to water quality have been discussed with community members at the Monitoring Committee Meetings. Furthermore, a sub-committee specifically dedicated to water quality was created within the Monitoring Committee and tasked with developing communication tools for this purpose. Significant communication efforts were

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
			<p>made with land users during participatory water quality monitoring campaigns and presentation of water quality results.</p> <p>Long-term outcomes regarding water quality are uncertain due to the project general monitoring programme scheduled to end in 2023 (it is assumed that following discussions with the provincial ministry of environment, some monitoring programmes might be pursued, but water quality is not expected to be one of them). While monitoring heavy metals has not been a requirement or condition of the authorizations for the project, baseline water quality parameters for the water treatment plant in Waskaganish included metals. However, subsequent monitoring programmes have not included metals as these were not identified as being an issue during the environmental assessments. Without such monitoring it is difficult to detect, attribute and address potential risks and opportunities related to mining development, hydropower and other anthropogenic activities in the facilities' catchment areas. Such monitoring would not necessarily have to be undertaken by Hydro-Québec but could be done by governmental authorities or other facilities such as</p>

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
					mines. The lack of any future surface water quality monitoring (including metals) is a <b>significant gap</b> against advanced requirements.
If management measures are required then monitoring is being undertaken to assess if management measures are effective for:					<p>Emerging erosion and sedimentation issues have been identified promptly throughout the Eastmain complex either by the monitoring programme activities or by community members that use the land. Good communication channels and mechanisms to address issues identified by community members and land users are in place.</p> <p>Monitoring activities and stabilisation works take into account opportunities such as local procurement and expertise developed during the implementation phase and ongoing monitoring activities. In addition, local communities and land-users have identified sensitive areas and erosive processes along shorelines of the Rupert River and communicate with Hydro-Québec so that these are assessed and addressed when required. Hydro-Québec has stockpiles of borrow materials to repair and maintain, if needed, embankment dams, weirs, and other structural mitigation measures such as bank stabilisation.</p>
• water quality	✓	Water quality is monitored throughout the affected river systems to ensure impacts to water quality are avoided and minimised. Effluent water quality is monitored at the powerhouses to ensure effectiveness of management measures.			
• erosion and sedimentation	✓	Monitoring of active banks and effectiveness of banks stabilisation are carried out to identify emerging issues.	Identification of ongoing or emerging erosion and sedimentation issues takes into account both risks and opportunities	✓	

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
<b>Management</b>					
Measures are in place to manage the following identified issues:			Processes are in place to anticipate and respond to emerging risks and opportunities relating to:		
• water quality	✓	Effective management measures and design features are in place at the Eastmain complex facilities to ensure effluent water quality meets regulatory standards (wastewater treatment facilities, secondary containment, oil/water separators, spill kits etc.).	• water quality	✗	The joint MC and RRWMB provide mechanisms to communicate and respond to emerging risks and concerns identified by land users or during monitoring activities. Nonetheless, reduced confidence and concerns related to water quality, in particular in the reduced flow reaches of the Rupert River, remain unresolved among some land users and community members, indicating that a better process is needed to address outstanding and emerging concerns regarding water quality and as such, is a <b>significant gap</b> against advanced requirements.
• erosion and sedimentation	✓	A monitoring programme is in place for sensitive locations within the Eastmain complex including shorelines and banks exposed to long fetches and prone to erosion; these include areas that have been subject to stabilisation measures.	• erosion and sedimentation	✓	The joint MC and RRWMB provide mechanisms to communicate and respond to emerging risks identified by land users or during monitoring activities and provide the opportunity to address these issues. The project is able to mobilise resources and local contractors to participate in the implementation of any stabilisation and related activities.
<b>Conformance and Compliance</b>					



Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)	Findings and Observations		Requirement is met: yes (✓) or no (✗)	Findings and Observations	
Processes and objectives in place to manage each of the following have been and are on track to be met:			There are no non-compliances relating to:		
• water quality, with no major non-compliances	✓	No major non-compliances have been identified.	• water quality	✓	An early non-compliance was identified related to effluent water quality at the wastewater treatment plant at the EM-1A powerhouse due to cold temperatures. The issue has been rectified by heating the WWTP during winter months to ensure efficient treatment and effluent water quality in compliance with Québec regulations. No other non-compliances have been identified.
• water quality, with no major non-conformances	✓	No major non-conformances have been identified.			
• erosion and sedimentation, with no major non-compliances	✓	No major non-compliances have been identified.			
• erosion and sedimentation, with no major non-conformances	✓	No major non-conformances have been identified.			
Commitments related to the following have been or are on track to be met:			There are no non-conformances relating to:		
• water quality	✓	Commitments related to water quality such as the WTP in Waskaganish have been met.	• water quality	✓	There are no reported non-conformances related to water quality.
• erosion and sedimentation	✓	No commitments reported as non-met.	• erosion and sedimentation	✓	There are no reported non-conformances related to erosion and sedimentation.
Outcomes					
Negative water quality impacts arising from activities of the operating hydropower	✓	Management measures are put in place and being implemented at the operating facilities that avoid, minimise	Water quality in the area affected by the operating hydropower facility is of a high quality	✓	Water quality in the area affected by the Eastmain complex continues to be of high quality.

Minimum Requirements		Advanced Requirements			
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	
facility are avoided, minimised and mitigated		and mitigate negative water quality impacts.	The facility has contributed or is on track to contribute to addressing water quality issues beyond those impacts caused by the operating hydropower facility	✓	Decreased flows in the Rupert River impacted the intake to the WTP in the community of Waskaganish. In addition to reconstructing the intake, the project voluntarily constructed a new WTP for the community.
Erosion and sedimentation issues are avoided, minimised and mitigated	✓	The erosion and sediment dynamics monitoring programme allows for issues to be identified in a timely manner so that erosion issues are avoided, minimised and mitigated.	Erosion and sedimentation associated with operating facility do not present ongoing problems for environmental, social and economic objectives of the facility or the project-affected areas	✓	Erosion and sediment transport dynamics are monitored such that other biodiversity (spawning areas), social (land use and water quality) and economic (generation) objectives are met. No major residual issues have been identified.

List of significant gaps against <b>Minimum Requirements</b>	Number of <b>Advanced Requirements</b> met
None	9

Summary of findings and other notable issues
There are no major issues related to surface water quality, erosion and sedimentation in the area affected by the Eastmain complex and there are good examples of emerging issues being addressed and examples of voluntary measures put in place to make improvements, beyond mitigating impacts. Nonetheless, reduced confidence and concerns related to water quality, remain unresolved among some land users and community members. The lack of monitoring metals makes it difficult to detect, attribute and address potential risks and opportunities, including those surrounding cumulative effects from other anthropogenic activities within the upper catchment. In addition, while some of the general monitoring activities may be continued following discussions with MELCCFP and the Cree Health Board, surface water quality monitoring is not likely to be one of them. The lack of ongoing data may affect the project's ability to reassure community members' perceptions around surface water quality.

Relevant evidence	
Interview	1-3, 5-11, 36, 38, 41, 46
Document	1-3, 7, 14-17, 20, 25-28, 32, 56, 60-74
Photo	3, 9, 78-83, 85-95, 98, 99, 105, 111, 116, 117, 119, 129

## 4 Community Impacts and Infrastructure Safety



### Scope and Principle

This section addresses how impacts of development of the hydropower facility on project-affected communities have been addressed, in cases where these commitments are well-documented against a pre-project baseline. These impacts include economic displacement, impacts on livelihoods and living standards, public health impacts, impacts to rights, risks and opportunities of those affected by the project, infrastructure safety risks and additional benefits that can arise from a hydropower facility. The principle is that livelihoods and living standards impacted by the project have been improved relative to pre-project conditions for project-affected communities, that commitments to project-affected communities have been fulfilled, and that life, property and community assets and resources are protected from the consequences of dam failure and other infrastructure safety risks. This section does not address requirements that relate to physical displacement or to Indigenous Peoples, which are addressed in Section 5 and 7. Other interested parties and groups are addressed in Section 10.

### Background

In the case of older projects, are there well-documented commitments in relation to project-affected communities and/or projects benefits made at the time of project approval and/or data on the pre-project baseline against which to compare post-project?

Yes, all scoring statements are relevant

Yes, the project's baseline and commitments are very well documented.

No, scoring statements on project-affected communities and/or project benefits are not relevant (in this case, issues in relation to these topics should be taken into consideration under Section 1 – Environmental and Social Issues Management)

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### Community Impacts and Benefits

Description of project-affected communities and how they are affected (distinguish between directly affected vs economically displaced vs other affected communities and include number of people and households)

According to the 2021 census, the Nord-du-Quebec region had a total population of 45,740 inhabitants. The main mother tongues were Cree (14,420 inhabitants), French (13,630), Inuktitut (12,275) and English (3,030). Native populations are generally expanding while non-native populations are decreasing.

This assessment focuses on the Cree communities of Nemaska (832) and Mistissini (3,731) which are located inland, and Eastmain (924) and Waskaganish (2,536) which are located along the James Bay coast, at the mouth of rivers affected by various stages of the James Bay hydropower complex. These villages experienced the most significant impacts including land flooded and changes in access to resources, changes in river flows, and social change. As significant portion of the traplines, i.e., traditional resource harvesting grounds belonging to these communities were affected. Each of these are used by several extended families and additional community members.

A number of additional native and non-native settlements are indirectly affected by the project (e.g., through traffic, increased flows, infrastructure, economic spinoffs) and are located further south or north-west, at a considerable distance.

	These include the Cree villages of Wemindji (1,300) and Chisasibi (4,500), which are also located on the James Bay coast, but are not directly affected by the Eastmain complex as defined in the scope of this assessment.
Agencies relevant to land acquisition	<p>Land in indigenous communities in Canada is owned collectively or by the government.</p> <p>Under the 1975 James Bay and Northern Quebec Agreement (JBNQA), a land claims settlement was reached between the indigenous peoples (Cree and Inuit), the Governments of Quebec and Canada, and government corporations including Hydro-Québec, and land between the 49<sup>th</sup> and the 55<sup>th</sup> parallel was divided into three categories; with their current status as follows:</p> <ul style="list-style-type: none"> <li>• Category I – 5,300 km<sup>2</sup> – direct control/ownership by the Cree, whose settlements are located on this land; since 2007 administered as the Eeyou Istchee Territory (TE) by the Cree Nation Government (CNG) (previously the Cree Regional Authority);</li> <li>• Category II – 70,000 km<sup>2</sup> – owned by Québec; exclusive hunting, fishing, and trapping rights for the Cree, in the vicinity of their settlements; formal role of CNG in land use planning, special compensation regime for developments;</li> <li>• Category III – 277,000 km<sup>2</sup> – owned by Québec; some natural resource rights of the Cree; co-management by the Cree and the non-native communities of the Jamesians; since 2014 administered by the Eeyou Istchee James Bay Regional Government, which together with the enclaved towns of Lebel-sur-Quévillon, Matagami, Chapais and Chibougamau forms the Jamésie Territory (TE).</li> </ul> <p>The Eastmain complex primarily affected Category III lands. Efforts were made to locate and design project components to minimize impacts on Category II lands, and there were practically no impacts on Category I lands. Hydro-Québec owns and operates infrastructure not related to the Eastmain complex on Category I lands (e.g., distribution systems).</p>
Agencies relevant to livelihood restoration and project benefits	Livelihood restoration and benefit sharing measures are primarily implemented through the CNG and through Niskamoon Corporation, a non-profit corporation established by agreement between the Cree and Hydro-Québec in 2004, to implement various compensation agreements.
<b>Infrastructure Safety and Public Health</b>	
Type of dam	<ul style="list-style-type: none"> <li>• Eastmain reservoir: one main rockfill embankment dam and 29 smaller rockfill embankment dikes around the reservoir.</li> <li>• Rupert diversion: one main embankment rockfill dam, 76 other smaller embankment rockfill dams or dikes that are homogeneous or rockfill dam with asphaltic concrete core, and a series of 8 weirs in the Rupert River.</li> </ul>
Dam height (m)	<ul style="list-style-type: none"> <li>• Eastmain reservoir: main dam maximum height: 72.6 m. Other smaller dams/dikes around the reservoir: 4 dams are between 25 and 50 m, 10 are between 7.5 and 25 m and 15 are under 7.5 m.</li> <li>• Rupert diversion: main diversion dam maximum height: 26.9 m. Other smaller dams/dikes are classified according to their hydraulic head: <math>8 \leq H &lt; 25</math>: 8 dams, <math>4 \leq H &lt; 8</math>: 20 dams, <math>1 \leq H &lt; 4</math>: 25 dams, <math>0 \leq H &lt; 1</math>: 3, and others have no hydraulic head.</li> </ul>
Probable maximum flood (m <sup>3</sup> / s)	Same as Design Floods (see below)
Design flood (expressed as estimated flood with return period)	<ul style="list-style-type: none"> <li>• Eastmain reservoir: 5,500 m<sup>3</sup>/s, (PMF)</li> <li>• Rupert diversion: 3,470 m<sup>3</sup>/s (PMF)</li> </ul>
Spillway capacity (m <sup>3</sup> / s)	<ul style="list-style-type: none"> <li>• Eastmain reservoir: 5,500 m<sup>3</sup>/s</li> </ul>

	<ul style="list-style-type: none"> <li>Rupert diversion: 3,642 m<sup>3</sup>/s at 303.1 masl and 4,718 m<sup>3</sup>/s at the maximum water level of 306.6 masl</li> </ul>
Spillway height (masl)	<ul style="list-style-type: none"> <li>Eastmain reservoir spillway sill is at 264.75 masl</li> <li>Rupert diversion spillway sill is at 286.0 m</li> </ul>
Headrace length (m)	EM-1 Intake structure is 66.9 m long Bernard-Landry Intake structure is 94.95 m long
Headrace width (m)	EM-1: Intake structure has 3 gates that are 9.3 m high x 6.4 m wide EM-1-A: Intake structure has 3 gates that are 10.3 m high x 7.5 m wide
Headrace capacity (m <sup>3</sup> / s)	EM-1: 840 m <sup>3</sup> /s (280 m <sup>3</sup> /s per unit x 3 units) EM-1-A: 1,344 m <sup>3</sup> /s (448 m <sup>3</sup> /s per unit x 3 units)
Seismicity	The Eastmain complex is located within the limits of the central Canadian craton, a region of low seismicity and in Seismic Zone 1 of Quebec's Dam Safety Regulation with a peak ground acceleration (rock) of 0.05g. 1 or 2 seismic events over a magnitude of 2.5 were recorded between 1970 and 1999 and only two magnitude 5 earthquakes occurred in this region (1905, in northern Michigan and in 1928 near Kapuskasing, Ontario).
Geology	The geology in the Eastmain complex area is dominated by Precambrian plutonic igneous rock such as granite, granodiorite and granitic gneisses overlain by a few meters of glacial till and fluvio-glacial deposits.
Dam safety regulatory authorities	Ministère de l'Environnement et Lutte contre les changements climatiques (MELCC).
Local presence/capacity of emergency services	Hydro-Québec (and affiliates such as SEBJ) are the main presence and provide emergency services for their camps and facilities and support other emergencies in the region (e.g., forest fires). SEBJ manages the Eastmain worker's camp which includes a fire station, medical services/ambulance and emergency services. There are also medical facilities and emergency services in the nearby Cree communities.
Potential safety risks in this context	The population at risk in the event of dam failure is located in downstream communities and camps/cottages along the shorelines of the Rupert River. Also at risk is downstream infrastructure including roads, transmission lines, and downstream dikes and weirs belonging to Hydro-Québec.
Degree of risk of dam failure and in what way	<p>Quebec legislation requires that dams be classified according to the risks that they pose to people and property. The evaluation of risks is determined by two factors: the probability of occurrence of hazards and the level of consequences if the hazards should materialise. A number of parameters influence these two factors. These include, for example, seismicity of the region, geological characteristics, type of dam, age of the structure, volume impounded, dam condition etc. Dam safety programmes such as Hydro-Quebec's comprehensive dam safety programme provide a robust framework that reduces the probability of occurrence of hazards, and reduces the consequences of a very unlikely event, were it to occur. Aspects of their framework that contribute to minimising the risks include, but are not limited to: state of the art design criteria, O&amp;M activities to maintain dams in good condition, monitoring and inspections programmes, instrumentation and surveillance programmes, independent dam safety reviews, emergency preparedness and response plans and more.</p> <p>Classification of the EM-1/EM-1-A and Rupert diversion dams according to the Dam Safety Act and Dams Safety regulation in Quebec indicates that:</p> <ul style="list-style-type: none"> <li>EM-1/EM-1-A are dams with a High consequence classification. Dam classification for all dams in Quebec is publicly available (<a href="http://www.cehq.gouv.qc.ca/barrages/detail.asp?no_mef_lieu=X2012604">http://www.cehq.gouv.qc.ca/barrages/detail.asp?no_mef_lieu=X2012604</a>) and the results of the assessment</li> </ul>

	<p>of the consequences of dam failure have been communicated to the local authorities responsible for the preparation of local emergency plans, and the relevant information has been integrated into emergency plans. Areas at risk include the Eastmain River and Opinaca reservoir as well as the Eastmain OE-11 dams, the community of Eastmain at James Bay downstream transmission lines, and part of the main road from Matagami to LG-2.</p> <ul style="list-style-type: none"> <li>Rupert diversion dam: has a High consequence classification. Areas at risk include the weirs downstream in the Rupert River, the regional road and the water intake in Waskaganish. A breach of the Rupert diversion dam’s spillway structure and of the LR-57 dike would result in the same downstream damages.</li> </ul>
Population at risk of dam break (locations, numbers)	<ul style="list-style-type: none"> <li>EM-1/EM-1A: in the unlikely event of dam failure, flooding would potentially affect downstream camps and a part of the community of Eastmain.</li> <li>Rupert diversion dam: in the unlikely event of a dam failure, flooding would potentially impact some downstream camps, cottages along the Rupert River, and part of Old Nemaska, Smokey Hill and Gravel Pit.</li> </ul>
Dam safety standards followed	Dam Safety Act and Dam Safety Regulation, of the Province of Québec.
Agencies relevant to dam safety	MELCC – Direction de la sécurité des barrages
Other infrastructure safety issues	Road safety, electrical safety, forest fires, extreme weather events (ice storms), public safety around the facilities, along rivers and on the reservoirs, and travel over ice covered reservoirs and rivers.
Description of key public health issues	Some of the relevant public health issues, in various ways related to hydropower development, are methylmercury contamination of fish, obesity, mental health, and infectious diseases such as Covid-19.
Agencies relevant to public health	Cree Board of Health and Social Services ( <a href="https://creehealth.org/home">https://creehealth.org/home</a> ); Centre régional de santé et de services sociaux de la Baie-James ( <a href="http://www.crssbaiejames.gouv.qc.ca/1/accueil.html">http://www.crssbaiejames.gouv.qc.ca/1/accueil.html</a> ). The remaining elements of the various Mercury Agreements are implemented through Niskamoon Corporation.

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
<b>Assessment</b>			
<b>Community Impacts and Benefits</b>			
Monitoring is being undertaken to assess if the following commitments have been delivered and if management measures are effective:			The coordination and monitoring mechanisms are strongly embedded into local communities. For example, decisions are made at the level of local councils or boards of the organizations which include community representatives, who are well aware of risks and opportunities. The Monitoring Committee conducted
<ul style="list-style-type: none"> <li>commitments to project-affected communities</li> </ul>	<p style="text-align: center;">✓</p> <p>There are various joint coordination and monitoring mechanisms between local communities and Hydro-Québec. The Monitoring Committee is tasked with tracking delivery of commitments and current environmental and social conditions related to the Eastmain</p>		

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
	<p>complex. Its Human Environment Subcommittee in particular is concerned with community impacts. Monetary commitments are tracked by the Niskamoon Corporation and the Administration Régionale Baie-James which manages the 'Eastmain Fund'. The Rupert River Water Management Board (RRWMB) is also involved in monitoring delivery of commitments.</p> <p>Because land use was considered a key and continuing issue, monitoring of land use and related mitigation measures is planned for at least 15 years, longer than most monitoring measures.</p> <p>Mercury monitoring is also expected to continue probably until 2030, due to the long-term nature of the issue.</p>		<p>regular community tours, until these were discontinued mainly due to the Covid-19 pandemic. Local workers and contractors for Hydro-Québec, as well as consultants hired in connection with the environmental monitoring program and other Hydro-Québec representatives are additional channels through which community concerns are identified.</p> <p>There are multiple examples for risks and opportunities that have been considered. An example for interrelationships is the reduced flow along the Rupert River, leading to changed appearance of the river and its water, and the resulting perceptions of loss among river users. Hydro-Québec offered remedial works at the Smokey Hill rapids to concentrate flows in the central channel of the river.</p> <p>The provincial review committee COMEX held post-implementation consultations with all communities in 2012. Surveys among the Cree were also conducted between 2005 and 2012. While respondents were generally positive about the direction of their communities, opinions about the project and its impacts were quite divided. The results have helped to prioritize community engagement and</p>
<ul style="list-style-type: none"> <li>commitments to project benefits</li> </ul>	<p>✓</p> <p>Key project benefits include:</p> <ul style="list-style-type: none"> <li>the funds for the Cree provided under various agreements and either paid directly to the CNG or administered through the Niskamoon Corporation</li> <li>the Eastmain Fund for a number of non-native communities</li> <li>regional employment, procurement and infrastructure</li> <li>provincial-wide benefits including rates for electricity that are among the lowest in North America, and</li> </ul>		



Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
		<p>dividends for the provincial government</p> <p>The delivery and the effectiveness of each of these benefits are monitored through a number of specific mechanisms.</p>			<p>mitigation activities. Hydro-Québec continues to conduct surveys at the provincial level, e.g., among municipal officials and Indigenous Peoples.</p>
Ongoing or emerging issues relating to the following have been identified:					
<ul style="list-style-type: none"> <li>• issues that affect project-affected communities</li> </ul>	✓	<p>The coordination and monitoring mechanisms listed above are still active, into the operations stage of the project. They have identified issues such as, for example, safe navigation on the ice, water quality in the Rupert River, and effects of reservoir fluctuations on burial sites. Most issues occurred largely as predicted during impact assessments, but adaptation and adjustments by local communities is taking time.</p>	<p>Identification of ongoing or emerging issues relating to project benefits takes into account both risks and opportunities</p>	✓	<p>An example for risks is dependency on benefits payments. This has been identified and addressed, for example, through cofinancing requirements; emphasis on transfer of traditional knowledge to generate interest in land-based activities, rather than subsidies; and follow-up on grants, by the Niskamoon Corporation.</p>
<ul style="list-style-type: none"> <li>• delivery of project benefits</li> </ul>	✓	<p>The same mechanisms are available to identify issues related to project benefits, for example regarding allocation of community funds or employment on the project.</p> <p>The latter is a relatively minor benefit at this stage, compared to the construction stage, also because there are now many other job opportunities, including in local government and mines. Nevertheless, Hydro-Québec continues to promote recruitment and retention of Indigenous staff and</p>			<p>Examples for opportunities include the negotiation of the Agreement Concerning Re-Appropriation of Territory affected by the EM-1a/Rupert project (2012), which transferred additional financial resources as well as the financial responsibility for compensation of remaining social impacts to the Cree and their Niskamoon Corporation, for the lifetime of the project.</p>



Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
	temporary contractors through multiple and evolving measures including job fairs, radio programs, internships, coaching and other integration programs. Language can be a challenge as most Cree are more proficient in English than French. There are no special preferences of directly affected family members over other Indigenous staff, but in practice many Cree working on environmental monitoring programmes are from families whose traplines were affected.		
<b>Infrastructure Safety and Public Health</b>			
Ongoing or emerging issues relating to the following have been identified:			
<ul style="list-style-type: none"> <li>dam and other infrastructure safety</li> </ul>	<p>✓</p> <p>Hydro-Quebec's comprehensive dam safety programme for 2019-2023 was approved by MELCC and covers operations and maintenance activities, condition assessment, surveillance and inspections schedules (routine, annual etc.), emergency management and management of emerging safety issues for all assets. It also includes a schedule for dam safety reviews that are planned between 2019-2023.</p> <p>Hydro-Québec has assessed the consequences of dam failure for a number of scenarios for their main dams and other smaller dams in the Eastmain/Rupert complex.</p>	<p>Identification of ongoing or emerging safety issues takes into account a broad range of scenarios and both risks and opportunities</p>	<p>✓</p> <p>Hydro-Québec's corporate safety policy's objective is the safety of its personnel and all people against risks, threats, hazards, accidents and exceptional situations that could occur within the organisation's activities. Under this policy, Hydro-Québec plans and implements risk assessment programmes and measures aimed at the protection of people, the safety and security of its assets and the protection of revenues, and monitors threats and vulnerabilities on a continual basis.</p> <p>Hydro-Québec has studied the ice cover in the Eastmain/Rupert complex and assessed different measurement methodologies in collaboration with</p>

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
	Navigation channels have been mapped in the reservoir for safe boating (avoiding areas that were not cleared prior to reservoir filling). Safety and debris booms are used upstream from the intake structures to the powerhouses and in other areas where fast water is a hazard for navigation, and public safety signage is located at dam, dikes, weirs and boat ramps throughout the complex.		the Cree communities of Waskaganish, Eastmain and Wemindji and also flies over the complex to maps ice conditions.  In addition, a road safety committee for the James Bay Road network assesses road safety risks and develops and implements measures for improvement annually, based on the nature of and the statistical trends of the incidents that were registered during the year. The Hydro-Québec vehicle fleet velocities are monitored with GPS devices and drivers that exceed speed limits are systematically warned.
• public health issues associated with the operating hydropower facility	✓ Public health issues also occurred largely as predicted, with the exception of the Covid-19 pandemic which required significant adjustments in communities and the Hydro-Québec workforce.		
Routine monitoring of dam and infrastructure safety is being undertaken to identify risks and assess the effectiveness of management measures	✓ Hydro-Québec carries out routine, annual and statutory dam inspections as per their approved dam safety programme (2019-2023). The frequency of routine dam site inspections and dam condition inspections for each structure is in accordance with the dam classification as described in the Quebec Dam Safety Regulation.  Annual review of road safety incidents and management measures summarises lessons learned and makes recommendations for improvement for the following year.		

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
<p>If public health issues require management measures then monitoring is being undertaken to assess if management measures are effective</p>	<p>✓</p> <p>There have been a number of public health assessments related to the Eastmain complex over the years, including studies on specific issues such as exposure to mercury, a multi-community environment-and-health longitudinal study (which was also used to answer specific questions such as the health status of trappers and hunters benefiting from the Income Security Program - ISP), studies on the evolution of health status and health determinants over time, opinion surveys that tracked subjective views on some of the health determinants, as well as the regular reporting by public health authorities. These assessments provided broad information on baseline and changes over time.</p> <p>As described in section 2 (Labour and Working Conditions), the health status of workers in the Eastmain complex is also monitored, which is relevant for public health as some workers are locals who use local health facilities, and there is some interaction between the workforce and local communities.</p>	<p>Identification of ongoing or emerging public health issues takes into account public health system capacities, access to health services, and health needs, risks and opportunities for different community groups</p>	<p>✓</p> <p>Specific health monitoring efforts have been limited in recent years, but health issues appear to be broadly understood and there are agreements and open communication channels with public health officials in the region (e.g., for use of public health facilities in Nemaska by Hydro-Québec staff). Because of the remoteness of the region, mutual support between corporate and public health services is essential.</p> <p>Health advisories, for example for the consumption of fish to limit the accumulation of mercury, are often differentiated by community groups. Health studies included control groups not affected by the Eastmain complex.</p> <p>Some Indigenous communities such as Nemaska do not allow the sale of alcohol and coordinated with Hydro-Québec to ensure that alcohol could only be purchased with a worker's ID at the work camp store.</p> <p>An emerging issue that was responded to rapidly is the Covid-19 pandemic, through lock-downs of Indigenous communities and protection measures for Hydro-Québec workers, in particular critical employees. Both the Indigenous communities and Hydro-Québec staff had lower infection rates</p>

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
					<p>than the average population, early in the pandemic.</p> <p>An example for a short-term opportunity is that Niskamoon Corporation provided additional subsidies for families to move to their hunting camps early in the Covid-19 pandemic, to promote social distancing while being active and consuming healthy food.</p>
<b>Management</b>					
<b>Community Impacts and Benefits</b>					
Measures are in place to deliver commitments:					
<ul style="list-style-type: none"> <li>to project-affected communities</li> </ul>	✓	<p>From Hydro-Québec's perspective, most measures regarding community impacts have been either delivered, or handed over to Niskamoon Corporation so that only payments under the various agreements need to be managed. Minor measures directly related to operations (such as the canoe of a trapper washed away by rising waters following a release) are still handled by Hydro-Québec through grievance mechanisms agreed by the parties.</p>	<p>Processes are in place to anticipate and respond to emerging risks and opportunities relating to project-affected communities and project benefits</p>	✓	<p>The relevant processes are primarily the various joint coordination, monitoring and funding mechanisms between Hydro-Québec and the Cree, as described above. Both Hydro-Québec and local officials are confident that funds and expertise are available to respond to risks and opportunities as they arise. Niskamoon Corporation receives slightly more requests than can be funded, but other sources are available as well.</p> <p>There are a number of examples for measures that were taken to respond to emerging issues, such as the refurbishment and expansion of the main boat landing site at Old Nemaska which was getting crowded, for more</p>
<ul style="list-style-type: none"> <li>to project benefits</li> </ul>	✓	<p>See above.</p>			
Measures are in place to manage any identified issues relating to these commitments:					

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
• to project-affected communities	✓	To ensure good community relations and smooth implementation of commitments, Hydro-Québec maintains social expertise, presence on the various boards and committees, working relationships with local community specialists and officials, and liaison officers for both the native and the non-native communities. Hydro-Québec also provides the secretariat function to some of the joint mechanisms.			<p>than CAD 1 million, and the expansion of cell phone service along the roads, which benefits Hydro-Québec operations but also the convenience and safety of other road users. Not all requests are granted, and cost-effectiveness plays an important role in funding decisions by Niskamoon Corporation and other entities.</p> <p>Hydro-Québec also has additional mechanisms for compensation and benefit sharing available that apply province-wide, such as a program for communities affected by transmission lines and substations (PMVI) and a sponsorship program, under the Directive d'engagement social (2019).</p>
• to project benefits	✓	See above.			
If there are any formal agreements with project-affected communities, these are publicly disclosed	✓	All formal agreements with communities are publicly disclosed and easily accessible. Individual agreements with each tallyman ('letters of undertaking') are also publicly available but were not widely disclosed.			
Commitments to project benefits are publicly disclosed	✓	See above. There is also transparency regarding the implementation of benefits; e.g. public financial reporting by the CNG, Niskamoon Corporation and Eastmain Fund.			
<b>Infrastructure Safety and Public Health</b>					
Dam and other infrastructure safety management plans and processes have been developed in conjunction with relevant regulatory and local authorities	✓	Hydro-Québec's 5-year dam safety programme (for 2019-2023) was approved by the dam safety regulator (MELCC) in March 2019 and emergency preparedness and response plans are reviewed with local communities.	Processes are in place to anticipate and respond to emerging infrastructure safety risks and opportunities	✓	Hydro-Québec has agreements of mutual assistance in the James Bay region and with the provincial police (Sûreté du Québec) to offer emergency services to the public and to communities in isolated areas. In

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
	Internally, Emergency Management is coordinated at the regional level with support at the local level (Centres d'urgence territoriaux or "CUT" and centres d'urgence locaux) and must carry out a minimum of two emergency exercises per year. Dam safety risks are managed with corporate level support and the CUT and local teams are responsible for managing other risks such as forest fires, bridge and road safety and risks in buildings. In addition, externally, Hydro-Québec sits on the board of the James Bay region emergency management organisation.		In addition, Hydro-Québec has framework agreements with local suppliers of borrow materials, machinery and equipment to maintain emergency readiness at their sites.
These plans and processes provide for communication of public safety measures	✓	Emergency Preparedness and Response Plans have been shared with people responsible for emergency management in communities.	
Emergency response plans and processes include awareness and training programmes and emergency response simulations	✓	Hydro-Québec has a schedule for emergency management training and different types of emergency simulations and drills at their various facilities/complexes, including the Eastmain complex.	Public safety measures are widely communicated in a timely and accessible manner
Measures are in place to manage identified public health issues	✓	Concerns about mercury contamination of fish and accumulation in consumers have been decreasing over the years, with reduced mercury concentrations and reduced fish consumption.	Processes are in place to anticipate and respond to emerging public health risks and opportunities
			<p>Safety measures are widely communicated to all downstream and other communities and land users and Hydro-Québec's community liaison specialists carry out awareness campaigns related to risks faced by the public and communities including issues related to public safety around their facilities and ice conditions.</p> <p>The regional health authorities, both for the Cree and for the non-native populations, as well as Hydro-Québec's medical service are well organized and resourced.</p> <p>The Cree health authorities reacted strongly to the Covid-19 pandemic,</p>

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
		<p>Nevertheless, health advisories and consumer guides are maintained.</p> <p>While the ability to manage modern or 'lifestyle' health issues such as obesity, diabetes, drug abuse or mental health is limited, there are some measures e.g., through Niskamoon Corporation and through workplace health education to promote a healthy lifestyle.</p>			<p>requiring lockdowns and quarantines to protect the communities. This also affected the Cree workers and contractors on the project, as well as any other interactions during the pandemic, but was seen as necessary due to high sensitivity of the population.</p>
<b>Conformance and Compliance</b>					
<b>Community Impacts and Benefits</b>					
Processes and objectives in place to manage the following have been and are on track to be met:			There are no non-compliances relating to:		
• delivery of commitments to project-affected communities, with no major non-compliances	✓	No non-compliances with any license conditions, regulatory requirements or community agreements have been identified.	• project-affected communities	✓	No non-compliances with any license conditions, regulatory requirements or community agreements were identified.
• delivery of commitments to project-affected communities, with no major non-conformances	✓	No non-conformances with Hydro-Québec's own plans and commitments have been identified.			
• project benefits, with no major non-compliances	✓	No non-compliances with any license conditions, regulatory requirements or community agreements have been identified.	• project benefits	✓	See above.
• project benefits, with no major non-conformances	✓	No non-conformances with Hydro-Québec's own plans and commitments have been identified.			
Commitments have been or are on track to be met relating to:			There are no non-conformances relating to:		



Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
• project-affected communities	✓	There are no indications for any commitments that have not been met or are on track to be met.	• project-affected communities	✓	No non-conformances with Hydro-Québec's own plans and commitments have been identified. While some measures did not have the expected results, these were addressed, and changes made to achieve planned outcomes.
• project benefits	✓	See above.	• project benefits	✓	See above
<b>Infrastructure Safety and Public Health</b>					
Processes and objectives in place to manage the following have been and are on track to be met:			There are no non-compliances relating to:		
• dam and other infrastructure safety, with no major non-compliances	✓	No non-compliances with respect to dam and other infrastructure safety have been identified.	• dam and other infrastructure safety	✓	No non-compliances with respect to dam and other infrastructure safety have been identified.
• dam and other infrastructure safety, with no major non-conformances	✓	No non-conformances with respect to dam and other infrastructure safety have been identified.			
• public health issues, with no major non-compliances	✓	No non-compliances with any license conditions, regulatory requirements or community agreements have been identified.	• public health	✓	No non-compliances with any license conditions, regulatory requirements or community agreements have been identified.
• public health issues, with no major non-conformances	✓	No non-conformances with Hydro-Québec's own plans and commitments have been identified.			
Commitments have been or are on track to be met relating to:			There are no non-conformances relating to:		
• dam and other infrastructure safety	✓	There are no indications for any commitments that have not been met with respect to dam or other infrastructure safety.	• dam and other infrastructure safety	✓	No non-conformances with respect to dam and other infrastructure safety have been identified.



Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
• public health	✓	There are no indications for any commitments that have not been met with respect to public health.	• public health	✓	No non-conformances with respect to public health have been identified.
Outcomes					
Community Impacts and Benefits					
Livelihoods and living standards impacted by the project have been or are on track to be improved	✓	<p>According to the 2021 Canadian census, in 2020 median total incomes in the 4 Cree communities directly affected by the project in 2020 ranged from CAD 39,200 to CAD 48,400, compared to median values of CAD 41,600 for the non-native affected communities, and CAD 40,800 for the province of Québec. Incomes of women are notably higher than those of men in Cree communities. Data for previous censuses are not directly comparable, but the Cree in this region are generally considered to have better livelihoods than other indigenous groups in Canada, and to have improved their situation over the past decades.</p> <p>Other notable improvements include the quality of dwellings, infrastructure, public services etc. Benefits have been particularly significant for the tallymen and other land users.</p>	The measures put in place to improve livelihoods and living standards are on track to become self-sustaining in the long-term	✓	Many of the compensation and benefits measures are either designed for the long term, lasting long into the operation phase or even for the lifetime of the project, or have triggered investments at the community and individual level that will sustain improvements over the long term. See also the list of benefits below, which should be considered a mix of compensation and of benefit sharing measures.
Economic displacement has been fairly compensated, preferably through provision	✓	Economic displacement affected primarily the tallymen and other land users. They negotiated individual			

Minimum Requirements		Advanced Requirements					
Requirement is met: yes (✓) or no (✗)		Findings and Observations		Requirement is met: yes (✓) or no (✗)		Findings and Observations	
of comparable goods, property or services		compensation agreements that included in-kind replacement of temporary camps, boat launching sites, trails and other features, generally at a higher quality and number than before. They also benefit from income subsidies for resource harvesting activities, under the JBNQA.					
Communities directly affected by the development of the hydropower facility and any other identified beneficiary of the facility have received or are on track to receive benefits		✓	See under Advanced Requirements.	Benefits are significant and sustained for communities affected by the project		✓	<p>The agreed benefits are very substantial, considering the relatively small population of the affected region. The main quantifiable benefits are:</p> <ul style="list-style-type: none"> <li>• Paix des Braves Agreement: Royalty payments by the provincial government to the CNG of at least CAD 70 million p.a. (increasing according to indexation) until 2052; a share of the payments is invested in a long-term fund to provide benefits in perpetuity</li> <li>• Nadoshtin Agreement: total of CAD 29.65 million</li> <li>• Boumhounan Agreement: total of CAD 44.65 million</li> <li>• Mercury Agreement II: total of CAD 24 million</li> <li>• Agreement Concerning Re-Appropriation of Territory – CAD 2.75 million annually, increasing according to indexation, for the lifetime of the project</li> </ul>

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
			<ul style="list-style-type: none"> <li>• Eastmain Fund: approximately CAD 300 million over 50 years for non-native communities</li> <li>• During project implementation, hundreds of jobs were created for the Cree and contracts worth more than CAD 1.2 billion were awarded to Cree companies. While permanent jobs are now substantially reduced during operations, temporary jobs during the summer remain an important complement to hunting in winter for a number of families, the initial spinoffs led to substantial investments in equipment, training etc, and the infrastructure such as roads built (and partially maintained) by Hydro-Québec still provides benefits, such as enabling access to the land and new investments in the region. (There were fewer spinoffs for non-native companies in the region, which has led to some discussions about the criteria for preferential contracting).</li> <li>• At the provincial level, in 2021, for most consumer categories power rates in Montreal were the lowest in most North American cities, and Hydro-Québec paid a CAD 2.7 billion dividend to the Québec</li> </ul>

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
					government. There are also some other, comparatively minor payments such as property taxes and water fees.
<b>Infrastructure Safety and Public Health</b>					
Safety risks have been avoided, minimised and mitigated with no significant gaps	✓	There are no indications for dam and infrastructure safety risks not being adequately managed.	Safety risks have been avoided, minimised and mitigated with no identified gaps	✓	Safety risks at the Eastmain complex are continually monitored and measures in place to avoid, minimise and mitigate risks, and these are communicated in a timely manner to communities and land users through various channels including community liaison specialists, and the various joint committees (Monitoring Committee, RRWMB).
			Safety issues have been addressed beyond those risks caused by the operating facility itself	✓	Examples of safety issues being addressed beyond risks caused by the operating facility include the mutual assistance agreements at the regional level by which Hydro-Québec provides emergency services and assistance because of their presence in the territory; these include assistance during forest fires and other external issues and emergencies not related to their operations.
Negative public health impacts arising from activities of the operating hydropower facility are avoided, minimised and mitigated	✓	There are no indications for negative impacts that have not been adequately managed.	Where opportunities have been identified, measures to address public health issues beyond those impacts caused by the operating hydropower facility have been or are on track to be achieved	✓	Examples for positive impacts on public health include improvements in access to health services (improved roads, health facilities etc. financed by the project or by recipients of benefits funds), mental health benefits from an increased sense of autonomy and

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
			control, and initiatives to promote healthy lifestyles, including diets.

List of significant gaps against <b>Minimum Requirements</b>	Number of <b>Advanced Requirements</b> met
None	21

Summary of findings and other notable issues
<p>All relevant negative impacts of the Eastmain complex on livelihoods, living standards, and public health have been identified and well managed. Residual impacts such as reduced fishing success and psycho-social impacts (e.g., sadness over the loss of land and traditional activities) have been acknowledged and addressed as far as possible. Use of the land for traditional activities has actually increased since the early 2000s, since access, traditional knowledge, motivation and stable family incomes were often a larger obstacle than resource availability. The Cree and to a lesser extent, non-native populations in the area have received and continue to receive exceptionally large and sustained benefits and have significant influence over the design and implementation of mitigation, compensation, and benefits measures.</p> <p>Hydro-Québec has a robust dam safety programme which includes dam instrumentation, routine and annual inspections and an approved dam safety review programme in line with the Quebec regulatory framework. In addition, a good on-site road safety management and review process allows for continual improvement. Hydro-Québec contributes to off-site public safety through mutual assistance agreements with other entities such as the provincial police and provide emergency assistance services to the public and nearby communities when needed.</p>

Relevant evidence	
Interview	1, 2, 9-12, 13, 14, 15, 16, 17, 18, 20, 22, 23, 24, 25, 26, 31, 34-38, 42, 44-47
Document	1, 3, 10, 12, 20, 28, 75-94, 95-119, 120-132, 196
Photo	3, 13, 17, 23, 30, 31, 34, 37, 42, 43-47, 49, 50, 52, 53, 54, 57, 67, 69, 72, 73, 74, 76, 84, 91-96, 97-99, 101, 103, 108-134

## 5 Resettlement



### Scope and Principle

This section addresses how the physical displacement arising from development of the hydropower facility has been addressed, in cases where resettlement occurred and commitments are well-documented against a pre-project baseline. The principle is that the dignity and human rights of those physically displaced have been respected; that these matters have been dealt with in a fair and equitable manner; that livelihoods and standards of living for resettles and host communities have been improved; and that commitments made to resettles and host communities have been fully fulfilled. This section does not address those that are only economically displaced, who are addressed in Section 4.

### Background

Did the project require or result in any physical displacement of people? Please state the evidence on which this determination is made.

Yes, this section is relevant (for older projects, move on to the next question)

[Click here to enter text.](#)

No, this section is not relevant

This section is not relevant because

- No Cree settlements were directly affected by the Eastmain complex.
- While a number of seasonal camps for hunting, fishing, trapping and family gatherings (two primary camps and a number of secondary camps) had to be relocated, these do not meet the definition of permanent or main dwellings, and this impact is covered under section 4. Some relocation of camps was also only temporary, to avoid nuisances from construction activities. The camps are generally used by the tallymen and their families during resource harvesting seasons and holidays, and only in some cases for extended periods of time. This is typically for beneficiaries of the Income Security Program for Cree Hunters and Trappers (ISP), which requires spending at least 120 days conducting harvesting and related activities of which at least 90 days must be spent away from a settlement.

## 6 Biodiversity and Invasive Species



Scope and Principle	
<p>This section addresses ecosystem values, habitat and specific issues such as threatened species and fish passage in the catchment, reservoir and downstream areas, as well as potential impacts arising from pest and invasive species associated with the operating hydropower facility. The principle is that there are healthy, functional and viable aquatic and terrestrial ecosystems in the area that are sustainable over the long-term; that biodiversity impacts arising from the operating hydropower facility are managed responsibly; that ongoing or emerging biodiversity issues are identified and addressed as required; and that commitments to implement biodiversity and invasive species measures are fulfilled.</p>	
Background	
<p>Short description of the ecological region in the project area</p>	<p>The project is located within the Hudson Bay Plains (Hudson-James Lowlands) and the northern limits of the Boreal Shield ecozones. The area is characterised by harsh winters and acidic soils, and vegetation is dominated by black spruce, moss and lichens.</p>
<p>Protected areas (national parks and reserves etc) and their distance from the project</p>	<p>There are a number of protected areas in the James Bay region that protect similar ecosystems as those within the project area. The closest is the Waskaganish Biodiversity Reserve (IUCN Category II) located north of the Rupert River, which includes the downstream reaches of the Pontax River to James Bay and the Machisakahikanistikw River, tributary to the Pontax. The reserve covers an area of 1,062.7 km<sup>2</sup> and is located approximately 40 km from the town of Waskaganish. Conservation objectives relate to terrestrial and aquatic ecotones including coastal and freshwater habitats and the conservation of an unregulated characteristic James Bay catchment.</p> <p>The Chisesaakahikan and Broadback River Biodiversity Reserve (IUCN Category II) is located on the upper Rupert River plateau and allows traditional Cree activities, and also protects the historic Hudson Bay trading post and historic village of Old Nemiscau at Lake Nemiscau.</p>
<p>Critical habitats in the project area, including important bird areas, hotspots of endemism etc.</p>	<p>The Boatswain Bay Migratory Bird Sanctuary (IUCN Category 1a) located north of Waskaganish, is an important place where many birds feed, rest and nest.</p>
<p># threatened species in the directly affected area: terrestrial</p>	<p>Threatened species listed under legislation in Canada (Species at Risk Act) and Quebec (E-12.01 - Act respecting threatened or vulnerable species) of special status species include:</p> <ul style="list-style-type: none"> <li>• Woodland caribou (<i>Rangifer tarandus</i>): VU</li> </ul>

	<ul style="list-style-type: none"> <li>• A number of plant species found in different areas are listed as likely to be designated as threatened or vulnerable: for example, <i>Gratiola lutea</i> and Robinson’s Hawkweed (<i>Hieracium robinsonii</i>) found near the Rupert River, and others.</li> <li>• 13 of 16 listed bird species known to occur in the area with special status were observed during the baseline studies, including: Short-eared owl (<i>Asio flammeus</i>) listed as likely to be designated as threatened or vulnerable, Nelson's sharp-tailed sparrow (<i>Ammospiza nelson</i>) listed as likely to be designated as threatened or vulnerable.</li> </ul>
# threatened species: aquatic	<p>Special status aquatic species listed under Canadian and Quebec legislation include:</p> <ul style="list-style-type: none"> <li>• Yellow sturgeon (<i>Acipenser fulvescens</i>)</li> <li>• Coastal wetland flora species <i>Gentianopsis procera</i> ssp. <i>macounii</i> and <i>Ranunculus pallasii</i> (considered rare in Canada)</li> </ul>
Any other species of conservation importance	<p>Species protected under the Migratory Birds Convention Act, 1994 (MBCA) include Canada geese, Bonaparte’s Gull.</p> <p>Seasonal cisco migration up the Rupert River and waterfowl gathering areas are important to the Cree and are included in monitoring activities.</p>
Migratory pathways	<p>The Boatswain Bay Migratory Bird Sanctuary (IUCN Category 1a) located north of Waskaganish, is an important place where many birds feed, rest and nest.</p>
Invasive species: terrestrial	<p>In the Province of Québec, invasive flora species are managed by the MELCC (Ministry of Environment and Climate Change), whereas invasive fauna species are managed under MFFP (Ministry of Forests, Fauna and Parks). MELCC has identified a priority list of 18 invasive flora species considered a nuisance or threat to biodiversity or natural ecosystem function and includes terrestrial and aquatic species.</p> <p>Hydro-Québec’s Standard Environmental Clauses (included in all contractor and subcontractor contracts) include measures to prevent the introduction and propagation of invasive species, in particular in northern areas not yet affected by specific invasive species that cause concern in southern latitudes.</p>
Invasive species: aquatic	<p>See above. Known aquatic invasive species in Québec include a variety of species including molluscs, fish and flora species that are present in the southern latitudes of the province and have not yet reached the James Bay area.</p>
Key threats to biodiversity	<p>Habitat loss and fragmentation from hydropower, linear infrastructure, mining activities and climate change. The Eastmain complex transforms approximately 975 km<sup>2</sup> of terrestrial, riverine and natural lake habitat to reservoir habitat.</p>



Agencies involved in biodiversity conservation	MELCC (Ministry of Environment and Climate Change), and MFFP (Ministry of Forests, Fauna and Parks)
Other relevant information	<p>Hydro-Quebec’s Corporate Strategy on Biodiversity, 2015–2020, provided a framework for taking account of and protecting biodiversity and was based on the following 4 issues:</p> <ol style="list-style-type: none"> <li>1) Protect and restore ecosystems</li> <li>2) Develop tools that help maintain biodiversity</li> <li>3) Acquire knowledge</li> <li>4) Raise awareness, inform, and educate</li> </ol> <p>In addition, Hydro-Québec protects 16 special-status wildlife species through its participation in recovery teams coordinated by the <i>Ministère des Forêts, de la Faune et des Parcs</i>.</p> <p>The Vision of the Cree Regional Conservation Strategy (2015) developed by the Cree Nation Government is to maintain strong ties to the Cree cultural heritage and way of life, and sustain biodiversity by creating a large, interconnected network of conservation areas in the Cree territories.</p>

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
<b>Assessment</b>			
Ongoing or emerging biodiversity issues have been identified	✓ Biodiversity issues were identified during the environmental assessment processes and led to a number of design considerations. In the reduced flow reaches downstream of the Rupert River diversion 8 hydraulic structures (weirs, spur dikes or riprap mats) were constructed at target areas to maintain minimum water levels and flows, to conserve aquatic habitat (aquatic grass beds), fish passage conditions and land use activities (navigation, fishing, etc.). A 2.9 km tunnel between the Rupert diversion	Identification of ongoing or emerging biodiversity issues takes into account both risks and opportunities	✓ Identification of risks and opportunities related to biodiversity includes ongoing scientific research by Hydro-Québec experts, including collaboration with universities and include woodland caribou and moose studies in collaboration with Université Laval, aquatic ecology studies with Université du Québec en Outaouais, and joint research on eelgrass in James Bay between the Cree Nation Government and Hydro-Québec, under the auspices of the Niskamoon

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
	<p>forebay and tailbay ponded areas was constructed to minimise the extent of the flooded area (346 km<sup>2</sup>). Other measures include fish passage structures.</p> <p>Ongoing and emerging issues are identified through monitoring programmes, the Monitoring Committee (MC) and Rupert River Water Management Board (RRWMB) in collaboration with Cree communities (refer to sections 1 and 7 on the MC and RRWMB and to section 11 on the ecological flow regime in the Rupert River).</p>		<p>Corporation and involving experts from universities across Canada.</p> <p>Results from Hydro-Québec research and their scientific publications are available to the public. Opportunities include extensive participation of the Cree in the monitoring activities and collaborations identified through the joint Monitoring Committee (MC) and Rupert River Water Management Board (RRWMB) where results of monitoring and observations are shared and lead to the timely identification of issues.</p>
<p>If management measures are required, then monitoring is being undertaken to assess if management measures are effective</p>	<p>✓</p> <p>Measures to manage aquatic biodiversity issues are associated with monitoring activities and habitat development, including for example: fish tagging to assess the effectiveness of the fish passage located on the Eastmain River at PK207, a telemetric study to monitor the yellow sturgeon population, monitoring of yellow sturgeon and brook trout habitat compensation (development of spawning grounds and embanked bays), monitoring of sturgeon and cisco habitats, monitoring of riparian habitat in the Eastmain reservoir, monitoring of aquatic and shoreline vegetation and eelgrass. Terrestrial biodiversity monitoring covers</p>		

Minimum Requirements		Advanced Requirements					
Requirement is met: yes (✓) or no (✗)		Findings and Observations		Requirement is met: yes (✓) or no (✗)		Findings and Observations	
		<p>populations of moose, caribou, beaver, small wildlife, small mammals and birds include waterfowl, birds of prey, forest birds, short-eared owl, Bonaparte's Gull and the Great Grey Owl.</p> <p>The monitoring programme for the EM-1A-S-R facilities between 2007 and 2023 included the establishment of a specific monitoring committee to assess the effectiveness of the ecological flow for spawning habitat in the Rupert River. The committee is composed of two DFO specialists, 2 specialists from MDDEP (<i>Direction des évaluations environnementales</i>), and 2 analysts and a secretary from Hydro-Québec.</p>					
Management							
Measures are in place to manage identified biodiversity issues	✓	<p>Many design and operational measures are in place to manage biodiversity issues, and an adaptive management approach is used to adjust and modify measures or monitoring methods to ensure the measures are effective and the monitoring methodology or performance indicators are fit for purpose. For example, based on the fish passage data it was observed that some species had more difficulty passing through structures, and some</p>		Processes are in place to anticipate and respond to emerging risks and opportunities	✓	<p>The monitoring programme for 2007-2023, the MC and the RRWMB are all processes that have been in place to anticipate and respond and emerging risks and opportunities. For example, concerns regarding the observed decrease in number and size of cisco migrating upstream in the fall in the Rupert River were raised by the Cree and further studies on cisco migration indicated that the upstream number of cisco had not decreased, but that due to the lower discharge in the river the</p>	

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
		<p>modifications were made to enhance their effectiveness. Other measures to enhance wildlife habitat include wetland creation in rehabilitated borrow areas, osprey nesting platforms, shelters for small wildlife, creation of riparian habitat, and installation of nesting boxes for waterfowl.</p> <p>The project-related biodiversity measures are aligned with Cree Nation, Québec and federal government conservation approaches.</p>			<p>fish were using the full width of the river to migrate upstream, and not only the lower flow velocity sectors along the shorelines to migrate upstream.</p> <p>In response to concerns regarding decreasing eelgrass in James Bay in areas around the mouth of the La Grande River, and the potential impact on migrating geese, as mentioned above joint studies have been undertaken between the Cree Nation Government and Hydro-Québec; results are to be presented in late 2022.</p>
Conformance and Compliance					
Processes and objectives in place to manage biodiversity issues have been and are on track to be met with:			There are no non-compliances	✓	There are no non-compliances with respect to biodiversity.
• no major non-compliances	✓	No major non-compliances have been reported.			
• no major non-conformances	✓	No major non-conformances have been reported.	There are no non-conformances	✓	There are no non-conformances with respect to biodiversity.
Biodiversity related commitments have been or are on track to be met	✓	A number of voluntary commitments related to biodiversity have been met and are expected to continue to be met, partly in collaboration with the MC and the RRWMB.			
Outcomes					
Negative biodiversity impacts arising from activities of the operating facility are avoided,	✓	Biodiversity impacts from the operating facilities have been and are avoided, minimised, mitigated, and	There are healthy, functional and viable aquatic and terrestrial ecosystems in the	✓	Monitoring results indicate that aquatic ecosystems are functional and viable. The minimum ecological flow in

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
minimised, mitigated, and compensated	<p>compensated. Fish passage study results on the Rupert River show that target species (white sucker, longnose sucker, walleye and lake whitefish) use the spawning habitats created in the river; however results for brook trout are not as clear and are being discussed with MELCC. Fishing yields since commissioning of the Rupert diversion in 2009 indicate that it did not cause a decrease in the number of juvenile lake sturgeon in different sectors of the river, and that fishing yields showed an upward trend or remained stable. Sustained results may require ongoing monitoring (e.g. for species with longer life cycles such as sturgeon) and it is expected that pending discussions with MELCC, some biodiversity monitoring activities will be extended post-2023 they were scheduled to conclude. It is expected that monitoring of the different groups of Caribou that move south and/or north in response to land pressure and climate change will continue, as well as moose which are important species to the Cree.</p>	<p>area affected by the hydropower facility that are sustained over the long-term</p>	<p>the Rupert River is equivalent to the average summer flow and mimics a natural flow regime (higher in the fall and during the spring freshet). The hydraulic structures along the Rupert River maintain water levels at target areas at the average summer water level, regardless of whether the year is a wet year or a dry year, and have been successful in maintaining aquatic habitat conditions. Although terrestrial habitat has been lost, there are no indications for major changes in populations of terrestrial species. The protected areas in the region are not affected by the project.</p>
		<p>The facility has contributed or is on track to contribute to addressing biodiversity issues beyond those impacts caused by the operating hydropower facility</p>	<p>Through a number of voluntary measures (e.g., additional spawning habitat compensation and fish passage, significant scientific research and studies in collaboration with the Cree, government experts and universities), the Eastmain complex contributes to addressing biodiversity issues beyond the impacts caused by operations.</p> <p>While the decline of eelgrass is not well understood, current studies indicate it is a complex phenomenon that may not be directly linked to the changed freshwater outflows into the James Bay.</p>

List of significant gaps against <b>Minimum Requirements</b>	Number of <b>Advanced Requirements</b> met
None	6

Summary of findings and other notable issues
While the Eastmain complex has a large footprint, healthy and functional aquatic and terrestrial ecosystems remain in place. Risks and opportunities are identified and addressed via monitoring activities and research, and there are examples of voluntary biodiversity measures (beyond permit conditions). Sustained results may require ongoing monitoring (e.g., for species with longer life cycles such as sturgeon) and it is expected that pending discussions with MELCC, some biodiversity monitoring activities will be extended past 2023.

Relevant evidence	
Interview	1, 2, 4, 5, 27, 36, 40, 41
Document	1, 2, 3, 6, 16, 18, 19, 20-27, 29, 30, 31, 32, 133-144
Photo	38, 57, 63, 65, 66, 79-83, 85-95, 104, 105, 106, 107, 112-114, 116, 117, 118-120, 136, 137.

## 7 Indigenous Peoples



Scope and Principle
This section addresses the rights at risk and opportunities of Indigenous Peoples with respect to the hydropower facility, recognising that as social groups with identities distinct from dominant groups in national societies, they are often the most marginalized and vulnerable segments of the population. The principle is that the operating facility respects the dignity, human rights, aspirations, culture, lands, knowledge, practices and natural resource-based livelihoods of Indigenous Peoples in an ongoing manner throughout the project life.

Background	
Are any of the affected people Indigenous Peoples? Please state the evidence on which this determination is made.	
Yes, this section is relevant	Yes. The project area is predominantly inhabited by the Cree.
No, this section is not relevant	<a href="#">Click here to enter text.</a>

	Add columns for each Indigenous People
Brief description of the peoples and their culture, lands, and representation	<p>The Cree are the largest native ethnic group in Canada. The Cree of the James Bay region call themselves Eeyou and their territory Eeyou Istchee, the People’s Land. It comprises eleven Cree communities with approximately 18,000 people and over 300 traplines, or traditional family hunting and trapping grounds. They consider their traditional territory to extend over an area of over 400,000 km<sup>2</sup>, mostly covered in boreal forests.</p> <p>The Cree are a young and expanding population with relatively high indicators of livelihoods and standard of living, compared to other Indigenous groups in Canada. A sub-group of the Cree, typically older than the average, are maintaining more traditional lifestyles and harvesting resources from the land, an activity that is encouraged and supported to maintain the cultural identity.</p> <p>The Cree are represented by the Grand Council of the Crees Eeyou Istchee (GCCEI) formed in 1974, and the Government of the Cree Nation (“GCN”). Both have identical membership, board of directors, governing structures and are managed and operated as one. The Cree Nation Head Office is located in the community of Nemaska, the community closest to the Eastmain complex.</p> <p>Following a referendum among the Cree, in 2002 the Québec government and the Cree concluded the Peace of the Braves (French: Paix des Braves) Agreement, and Hydro-Québec and the Cree concluded complementary agreements. These agreements settled outstanding conflicts, established a new relationship based on the principle of “Cree consent” with respect to development of infrastructure within Eeyou Istchee, and set the conditions for construction and mitigation of impacts of the Eastmain complex.</p>



Directly affected communities and how they are affected	See section 4.
Other affected indigenous communities	None
# households physically displaced	No households were physically displaced by the Eastmain complex, although a number of families lost seasonal camps used for traditional resource harvesting activities (see section 5).
# households economically displaced	See section 4.

Agencies relevant to Indigenous Peoples	The Cree have a large degree of autonomy in their territories and control institutions such as regional and local governments, police, school and health boards, businesses and specialized agencies such as the Niskamoon Corporation, set up to administer the compensation funds from Hydro-Québec. Both the Québec and the Canadian governments have departments for Indigenous Affairs.
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Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
<b>Assessment</b>			
Ongoing or emerging issues relating to the operating hydropower facility that may affect Indigenous Peoples' rights have been identified	✓	The key rights of Indigenous Peoples in the area (self-determination and control over their land and resources) have been long identified by the Cree, but were first recognized through the 1975 James Bay and Northern Quebec Agreement, and since then specified in more detail and implemented through a series of agreements with the federal and provincial governments and their departments, agencies and corporations, such Hydro-Québec.	Identification of issues that may affect Indigenous Peoples' rights is undertaken with the free, prior and informed participation of Indigenous Peoples
If management measures are required, then monitoring is being undertaken to assess if management measures are effective	✓	Monitoring arrangements are described under section 4. These cover Indigenous People's rights, including the meeting of obligations and commitments towards the Cree.	Identification of issues that may affect Indigenous Peoples' rights takes into account both risks and opportunities
<b>Management</b>			
		The Cree representatives have consented to the Eastmain complex and have co-designed and are co-managing the respective coordination and monitoring mechanisms. For example, for ongoing studies the terms of reference (ToR) are designed, consultants selected, and results accepted jointly with the Cree, and Cree workers participate in field study teams.	
		The Cree government is tracking risks and opportunities and bringing these up with external partners such as federal and provincial government agencies, and Hydro-Québec.	

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
Measures are in place to address the Indigenous Peoples' rights at risk	✓ Measures to address the right to self-determination include the consent rights included in the agreements, and the autonomy in the management of the compensation funds.  The control over Cree land and resources is also provided for in the agreements, and in practice even on Category III lands consent of the relevant tallymen is sought for all relevant activities, including for monitoring and research.  Hydro-Québec has committed to a policy on Indigenous relations (2019), created a specialized department with community liaison officers, and introduced mandatory training for staff.	✓ Measures to address ongoing or emerging issues that may affect Indigenous Peoples' rights at risk have been developed with the free, prior and informed participation of Indigenous Peoples	✓ The Cree representatives consented to the EM-1 phase as designed and permitted (but not started before consent was achieved), and were involved in the design (e.g., the location of the weirs, construction of tunnel between the Rupert diversion bays instead of canal), impact assessments and design of mitigation and compensation measures for the EM-1a/Rupert phase. Since then, they have actively participated in adaptive management and have taken over some responsibilities for the management of social impacts from Hydro-Québec.
Formal agreements are publicly disclosed	✓ The existence and summaries of all formal agreements are publicly disclosed and easily accessible, namely from the CNG and Niskamoon annual reports. This also includes agreements made in the course of ongoing management of impacts, which are accessible through community representatives and minutes of meetings.	✓ Processes are in place to anticipate and respond to emerging risks and opportunities	✓ As described in section 4.
<b>Conformance and Compliance</b>			
Processes and objectives relating to Indigenous Peoples' rights at risk have been and are on track to be met with:		There are no non-compliances	✓ No non-compliances with any license conditions, regulatory requirements or

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
• no major non-compliances	✓	No non-compliances with any license conditions, regulatory requirements or agreements with the Cree have been identified.			agreements with the Cree have been identified. A 3-yearly joint review of obligations is carried out, and the latest review in 2021 found that 40 obligations were being respected, 83 had been completed, 16 had been assumed by the Cree, and 1 was under discussion.
• no major non-conformances	✓	No non-conformances with Hydro-Québec's own plans and commitments have been identified.			No non-conformances with Hydro-Québec's own plans and commitments have been identified. While some measures did not have the expected results, these were addressed, and changes made to achieve planned outcomes.
Commitments made to Indigenous Peoples have been or are on track to be met	✓	At the corporate level, Hydro-Québec has committed to "respect and promote the rights, values and governance models of Indigenous peoples." At the project level, it has entered multiple formal and informal agreements. There are no indications that these commitments are not honoured.	There are no non-conformances	✓	In 2019 Hydro-Québec joined the Canadian Council for Aboriginal Business and in 2021, obtained silver-level certification under the PAR program (Progressive Aboriginal Relations). The certification is based on independent verification of company reporting on performance and continued improvement, which is then reviewed by a jury of Indigenous business leaders.
Outcomes					
Processes provide for negative impacts of the project to Indigenous Peoples' rights to be avoided, minimised, mitigated or compensated	✓	The protection of Indigenous peoples' rights is provided for in the agreements signed with the national and provincial governments and Hydro-Québec. In addition, the ongoing coordination,	Opportunities for positive impacts have been identified and maximised as far as practicable	✓	See section 4.

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
	<p>monitoring and dispute resolution processes provide for implementation and adaptive management of the agreements. The Cree have significant control over these processes (e.g., they appoint all members of the Niskamoon Board, including those representing Hydro-Québec).</p> <p>There are residual negative impacts on some members of the Cree (for example, traditional fishing activities on the Rupert River are affected). These are not considered infringements of their rights since the Cree took a free, prior, and informed decision through a democratic process to consent to the project. Nevertheless, it should be noted that consent has not been unanimous, and many Cree remain ambivalent about the Eastmain complex, considering that their consent involved difficult trade-offs.</p>		
Processes provide some practicable opportunities for positive impacts to be achieved	<p>✓</p> <p>Multiple measures and mechanisms have been developed in this project to identify and achieve positive impacts (see section 4). Some of these have specifically strengthened Indigenous Peoples' rights. For example, the right to self-determination has been strengthened by the royalty and compensation agreements, which have strengthened the Cree's financial</p>	<p>Opportunities for positive impacts have been or are on track to be achieved</p> <p>✓</p>	<p>See section 4. In the opinion of some observers, the a) job and business opportunities associated with the project and b) the self-administered payments to Cree institutions such as the CNG and Niskamoon Corporation have been the most effective in creating positive change in the Cree communities.</p>

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
	autonomy and sustainability, and by support for cultural institutions which have strengthened the Cree identity. The right to control over the land and its resources has been strengthened by the multiple measures taken to encourage presence of the Cree on the land, and their active involvement in research and management of natural resources.		

List of significant gaps against <b>Minimum Requirements</b>	Number of <b>Advanced Requirements</b> met
None	8

Summary of findings and other notable issues
Since the late 1990s, Hydro-Québec has aimed to have all its projects received favourably by affected communities. Agreements with the Cree allowed Hydro-Québec a more predictable implementation of the Eastmain complex, while they established consent rights, control over the land and its resources, and significant socio-economic benefits for the Cree. Construction and operation of the Eastmain complex have contributed to increased economic activity across the Cree territory, raising incomes and living standards to levels comparable to non-native populations, and reducing dependency. More and more responsibilities and decision-making powers have been handed over to the Cree, and relations between the two parties have been exceptionally constructive and respectful.

Relevant evidence	
Interview	9-11, 17, 24, 29-31, 34-38, 41, 42, 44-46
Document	20-28, 88, 89, 123, 127, 130-132, 139, 142, 145-163, 187, 189, 196, 218-220
Photo	55, 61, 70, 71, 84, 108-134

## 8 Cultural Heritage



<b>Scope and Principle</b>	
<p>This section addresses cultural heritage, with specific reference to physical cultural resources, associated with the hydropower facility. The principle is that physical cultural resources are identified, their importance is understood, and measures are in place to address those identified to be of high importance. This section does not address non-physical cultural resources, which are addressed in Section 1 and/or in Sections 5 and 7 when relevant.</p>	
<b>Background</b>	
<p>Does the project affect any physical cultural resources? Please state the evidence on which this determination is made.</p>	
Yes, this section is relevant	<p>Yes. The landscape has a strong cultural heritage value for local communities, as the Cree and their ancestors have lived here for at least ~5,000-6,000 years, and there were extensive archaeological investigations before construction of the hydropower projects. There are also some remains of more recent European presence, such as Hudson Bay Company trading posts.</p>
No, this section is not relevant	<p><a href="#">Click here to enter text.</a></p>
Sites of physical cultural heritage affected by or in proximity to the project-affected areas	How they are affected
<p>More than 600 zones with archaeological potential were identified during preparatory studies for both project phases, 158 of these were inventoried (through visual inspection and soundings) and about half of these, with particular archaeological relevance, excavated prior to construction/reservoir impoundment.</p> <p>Additional sites of cultural significance identified during the studies were burial sites, birthplaces, wildlife harvesting areas, camps and landscape elements; including Old Nemaska; the Nemiscau Lake rock-painting site; the former Hudson Bay Company trading post in Waskaganish, or Rupert House; and Noodamessehanan, or Smokey Hill, a traditional community fishing site.</p>	<p>A significant proportion of archaeological sites were affected by the direct footprint of the project during construction/reservoir impoundment. Most of these were excavated but burial sites were documented and left in place. The experience value of some sites (e.g., the Smokey Hill fishing site) was also affected. No additional sites have been identified that were impacted during operation (e.g., through erosion of banks), but monitoring continues.</p>
Agencies responsible for cultural heritage	<p>The Québec Ministry of Culture and Communications is responsible for cultural heritage across the province; however no sites in the project area are listed in its official register (Répertoire du patrimoine culturel du Québec).</p>

	<p>The Cree Nation Government (CNG) is responsible for cultural heritage in Eeyou Istchee. Since the Eastmain project began archaeology work has been transferred from the CNG’s Social and Cultural Development Department to the Anischaaukamikw Cree Cultural Institute, which has been operational since 2011.</p> <p>The Niskamoon Corporation manages Archaeology and Cultural Heritage Funds from Hydro-Québec destined for documenting and preserving cultural heritage, including both archaeology and Cree perceptions, knowledge, history, and use of the environment, and overseen by a Cultural Heritage Advisory Committee:</p> <ul style="list-style-type: none"> <li>• the Nadoshtin Fund (CAD 2.5 million) for the EM-1 project, and</li> <li>• the Boumhounan Fund (CAD 2.5 million) for the EM-1a/Rupert project.</li> </ul> <p>Concurrently and in coordination with the Cree archaeological program, since before the beginning of construction, Hydro-Québec/SEBJ also carried out an archaeological mitigation program directly.</p>
Other important local or regional cultural heritage values and issues	<p>The Cree cultural traditions are tied to the land and its resources in ways that go beyond individual heritage sites and objects. Traditional knowledge is linked to survival skills, food security and cultural vitality. Traditional knowledge, community involvement and control have been key to cultural heritage investigations and management in this project, as a result of dissatisfaction with approaches to archaeology in previous hydropower projects. According to the Anischaaukamikw Cree Cultural Institute website, the institute is part of the James Bay Crees’ “quest to exercise full control over all aspects of their lives, communities, and cultural destiny.”</p>

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
<b>Assessment</b>			
Ongoing or emerging cultural heritage issues with respect to physical cultural resources have been identified	✓	<p>The footprint of the Eastmain complex has not expanded since commissioning so there are no additional impacts to manage. Ongoing and emerging issues include research; diffusion of archaeological/ historic knowledge; display of artifacts; current conditions</p>	<p>Identification of ongoing or emerging cultural heritage issues takes broad considerations into account, and both risks and opportunities</p>
		✓	<p>Cooperation between the Cree archaeologists and Cultural Institute on the one hand and Hydro-Québec specialists is ongoing. For example, Hydro-Québec assisted in an investigation of a potential burial site exposed by bank erosion on the Fort</p>



Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
		of commemorative sites, interpretation panels and relocated gathering sites; and the conditions of some affected sites such as submerged burial sites.			George Island, former home of the Chisasibi community. In 2019 the Cree requested a survey of the status of the submerged burial sites, including the effects of reservoir water level fluctuations. The drawdown areas on reservoir banks have also been identified as a potential source of additional finds.
If management measures are required, then monitoring is being undertaken to assess if management measures are effective.	✓	The joint Monitoring Committee between the Cree and Hydro-Québec is one of the mechanisms to coordinate monitoring activities. Reservoir shoreline monitoring is one of the activities that could yield additional archaeological insights.			
Management					
Measures are in place to manage identified cultural heritage issues	✓	All identified cultural heritage issues have responsibilities and resources assigned. There are clear commitments of Hydro-Québec for continued monitoring and follow-up activities concerning archaeological and burial sites. Maintenance of commemorative sites near the Eastmain reservoir, the transfer tunnel between the Rupert diversion fore- and tailbays, and the Rupert diversion dam is done by Hydro-Québec, as part of normal facility maintenance.	Processes are in place to anticipate and respond to emerging risks and opportunities	✓	Surveys of the drawdown areas and the submerged burial sites are under preparation. Funding for such surveys and other activities related to cultural heritage are available through Niskamoon Corporation, Hydro-Québec and other sources. Activities are often carried out jointly, with Hydro-Québec providing logistical support (e.g., helicopters). Additional opportunities may result from the growing interest of the Cree in their cultural heritage.
Conformance and Compliance					
Processes and objectives in place to manage cultural heritage issues have been and are on track to be met with:					No non-compliances with any license conditions, regulatory requirements or agreements with the Cree were identified. Hydro-Québec already met its license conditions in 2013.
• no major non-compliances	✓	No non-compliances with any license conditions, regulatory requirements or	There are no non-compliances	✓	

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
		agreements with the Cree were identified.			
• no major non-conformances	✓	No non-conformances with Hydro-Québec's own plans and commitments have been identified.	There are no non-conformances	✓	No non-conformances with Hydro-Québec's own plans and commitments have been identified. Some delays in activities are due to the Covid-19 pandemic.
Cultural heritage related commitments have been or are on track to be met	✓	There are no indications for any commitments that have not been met or are on track to be met.			
Outcomes					
Negative cultural heritage impacts arising from activities of the operating hydropower facility are avoided, minimised, mitigated and compensated	✓	The heritage impacts of the Eastmain complex due to construction and impoundment were comprehensively addressed, including relocation of some minor project components, in close cooperation and largely to the satisfaction of the Cree. (There were some discussions over the time available for studies before impoundment, and over the ownership of artifacts which in Québec are in custody of the government, although some of them have been lent back to the Cree). The current operations have only minor additional impacts on cultural heritage, that are well managed.	Where opportunities have been identified, measures to address cultural heritage issues beyond those impacts caused by the facility have been or are on track to be achieved	✓	The investigations regarding the Eastmain complex have been among the most intensive in Québec and have yielded significant and well-documented results. Multiple opportunities to contribute to Cree cultural knowledge and awareness have been identified and realized. For example, there have been traveling exhibitions and multiple publications, e.g., about the history of the individual families in the project area. Hydro-Québec is one of the lead supporters of the Aanischaaukamikw Cree Cultural Institute, including a CAD 3 million financial contribution.
List of significant gaps against <b>Minimum Requirements</b>			Number of <b>Advanced Requirements</b> met		
None			5		

Summary of findings and other notable issues

The Eastmain complex affected a large area rich in cultural heritage resources, which has been occupied for millennia by ancestors of the current communities. It was prepared and accompanied by an unusually thorough and participative archaeology program, embedded in a broader program to preserve cultural identity. There have been positive impacts in terms of access to and knowledge of cultural heritage, and there are ongoing mechanisms to continue research and interpretation, and to address any future cultural heritage issues.

Relevant evidence

Interview	9-11, 28, 37, 38
Document	164-173
Photo	39, 55, 61, 84

## 9 Governance and Procurement



### Scope and Principle

This section addresses corporate and external governance considerations for the operating hydropower facility. The principle is that the owner/operator has sound corporate business structures, policies and practices; addresses transparency, integrity and accountability issues; can manage external governance issues (e.g. institutional capacity shortfalls, political risks including transboundary issues, public sector corruption risks); and can ensure compliance.

### Background

Key information on political context and public sector risks

Hydro-Québec is a provincial corporation of the Government of Québec. Québec is the largest province in Canada and the only French speaking region in North America.

The National Assembly of Québec makes Québec laws which only apply in the province. The Federal Parliament of Canada makes Canadian or federal laws which apply across all provinces and territories in Canada.

The Government of Canada through Crown-Indigenous Relations and Northern Affairs (CIRNAC) is responsible for the government-to-government relationship between Canada and First Nations. Three Indigenous nations in Québec (the Cree, the Inuit and the Naskapi) have signed land claim agreements with the Governments of Canada and Québec and/or Hydro-Québec including the James Bay and Northern Québec Agreement (JBNQA, 1975). In 2001, the Cree and the Government of Québec opened the way for a new government-to-government relationship through the Paix de Braves Agreement. In 2008, the Cree signed the Federal New Relationship with the Government of Canada, addressing past implementation of responsibilities to the Cree under the James Bay and Northern Québec Agreement. The Boumhounan Agreement was signed in 2002, providing a framework for the Eastmain 1-A/Rupert Project, which is a new project within the meaning of the JNBQA.

Three joint governance mechanisms between the Cree and Hydro-Québec have been established. Niskamoon Corporation provides a framework for cooperation between the Cree and Hydro-Québec, enabling the implementation of the Cree/Hydro-Québec Agreements. The Corporation facilitates access to funds and programs for Cree people, communities, and entities. The Rupert River Water Management Board (RRWMB) is a committee set up of three Cree members, three Hydro-Québec members and an independent Chairperson. The purpose of the RRWMB is to achieve consensus over management issues relating to the Rupert River Diversion. A Monitoring Committee between the Cree and Hydro-Québec provides a forum to discuss implementation of the agreements related to the Eastmain complex.

Key information on corporate ownership and governance

The Hydro-Québec Act (1944) established Hydro-Québec as a provincial corporation with the Government of Quebec as its single shareholder. In 2006, the Act was amended to introduce new governance rules which established a Board of Directors (BOD) normally composed of 17 members including the Chairman of the Board, President, and CEO. The BOD is appointed for a 4-year term (the Chairman, President, and CEO for 5 years) and currently (2021) consists of 11 women and 5 men. At least 2/3 of the BOD must qualify as independent directors. The BOD is supported by seven committees of which

	three are mandatory under the Act (Ethics, Audit and Human Resources Committees). The Ethics and Governance Committee oversees the conduct of Hydro-Québec business as well as that of Directors and all the company's employees. The Act also includes a series of 12 disclosures to be included in the Annual Report.
Details of the concession, if applicable	Not applicable.
Key licenses or permits	See section 1.
Other relevant information	In 2021, Hydro-Québec placed first in Corporate Knights' ranking of Canada's Best 50 Corporate Citizens. Also in 2021, the corporation received an EcoVadis platinum medal for performance in environment, labour and human rights, ethics, and sustainable resource procurement.

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
<b>Assessment</b>			
Ongoing or emerging political and public sector governance issues have been identified	✓ Hydro-Québec is a crown corporation of which the Government of Québec is the sole shareholder. The Sustainable Development Plan is aligned with Québec's Government Sustainable Development Strategy 2015-2020 and Agenda 21 for Culture.	There are no significant opportunities for improvement in the assessment of political and public sector governance issues and corporate governance requirements and issues	✓ Hydro Québec's Integrated Risk Management (IRM) approach incorporates an assessment of external context risks which includes: <ul style="list-style-type: none"> <li>• The cultural, social, political, legal, regulatory, financial, technological, economic, natural and competitive environment, at the international, national, regional or local level.</li> <li>• Factors and trends that have a critical impact on the organization's objectives.</li> <li>• Relationships with external stakeholders, their perceptions, and values.</li> </ul>
Corporate governance requirements and issues have been identified	✓ The Hydro-Québec Act establishes the corporate governance requirements of Hydro Québec and how relevant issues are identified and managed by the BOD.  Priority issues are sustainable procurement, inclusivity, anti-corruption and health and safety.		
Monitoring is being undertaken to assess if corporate governance measures are effective	✓ The Audit Committee of the BOD has a monitoring role with respect to the plan for optimal use of resources and internal control mechanisms and the implementation of a risk management process.		

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
		Hydro-Québec maintains an internal control system based on the recommendations of the Committee of Sponsoring Organizations (COSO) of the Treadway Commission to ensure that financial information is relevant and that corporate assets are appropriately recorded and protected.			
Management					
Processes are in place to manage the following:					
• corporate, political and public sector risks	✓	Hydro Québec has an Integrated Risk Management Group (GGIR) to support corporate decisions making and to quantify integrated risks related to the company's strategic challenges.	Processes are in place to anticipate and respond to emerging risks and opportunities	✓	<p>The Integrated Risk Management Group (GGIR) of Hydro-Québec uses state-of-the-art tools for risk management, including the Enablon risk management platform.</p> <p>Hydro Québec has a Social Responsibility Directive which is part of the Social Role policy that defines the company's donation and sponsorship activities, in addition to other activities laid out in the Strategic Plan. The budget for the social responsibility directives includes donations, sponsorships and employee time and skill contributions is determined annually as part of the corporate business plan.</p> <p>The Sustainable Development Plan 2020–2024 is modelled on the ISO 26000 standard on social responsibility.</p>
• compliance	✓	The <i>Affaires corporatives et juridiques et gouvernance</i> unit provides administrative support to the company's Board of Directors and the boards of Hydro-Québec subsidiaries, as well as legal services, advice, and opinions to the entire company.			
• social and environmental responsibility	✓	The Environment and Public Affairs Committee reports to the BOD on matters of environmental and public affairs, including environmental management, compliance and sustainable development, public health and safety, community relations and development, corporate social responsibility and reputation.			

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
<ul style="list-style-type: none"> <li>• procurement of goods and services</li> </ul>	<p>✓</p> <p>Hydro-Québec has an Executive Vice President in charge of Distribution, Procurement and Shared Services. The Company has a procurement policy and a Supplier Code of Conduct (HA-250/2018) adopted in 2018. The Supplier Code of Conduct includes provisions for security of supply, health and safety, environment, quality, efficiency and economic benefits to Québec and aboriginal interests.</p> <p>Hydro-Québec also integrates Total Cost Analysis (TCA) of goods and services at the time of procurement into corporate governance.</p> <p>Hydro-Québec uses Enablon to monitor HSE compliance of its suppliers in a real time web-based system.</p> <p>Hydro-Québec is also developing a procurement strategy for indigenous companies.</p>	<p>Contractors are required to meet or have consistent policies as the developer</p>	<p>✓</p> <p>The Supplier Code of Conduct addresses a range of sustainability concerns. For example, it requires that supply chains are free of all forced labour and comply with Québec and internal human rights and labour laws.</p> <p>Monitoring is done in real time using the Enablon platform allowing for ongoing monitoring of contractor performance and compliance with Hydro-Québec policies and procedures.</p>
<ul style="list-style-type: none"> <li>• grievance mechanisms</li> </ul>	<p>✓</p> <p>Hydro-Québec has a mechanism for any employee to report a breach of ethics to a first level or higher-level manager who in turn must inform the relevant business unit to take action. There is also a hotline for reporting any breaches of the Code of Ethics available to any employee, supplier, Hydro-Québec partner and the public.</p>		

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
	<p>An additional contact number exists for reporting any environmental, health and safety or corporate incident to the corporate security hotline Ouvrons l'oeil, available 24 hours a day, 7 days a week.</p> <p>An ombudsman is also available to help employees in any work-related matter involving tension or conflict at work.</p>		
<ul style="list-style-type: none"> <li>ethical business practices</li> </ul>	<p>✓</p> <p>In 2021, Hydro-Québec released a revised Code of Ethics that applies to all permanent, temporary and casual employees and wholly owned subsidiaries. All employees are required to electronically sign the Statement of Commitment within 30 days of joining Hydro-Québec and every year by March 31.</p> <p>Ethical business practices are also addressed through the Supplier Code of Conduct including rules of conduct for conflict of interest, corruption, gifts, obstruction, criminal interests, business relationships, etc.</p>		
<ul style="list-style-type: none"> <li>transparency</li> </ul>	<p>✓</p> <p>All requests for access to information received by Hydro-Québec are handled in accordance with the "Access Act" (CQLR, c. A-2.1). Hydro-Québec also has a Privacy Policy to protect personal information associated with its business processes. See also section 10.</p>	<p>Procurement processes include anti-corruption measures as well as sustainability and anti-corruption criteria specified in pre-qualification screening</p>	<p>✓</p> <p>As of 2020, Hydro-Québec is certified under ISO37001:2016. Additionally, the company has an anti-bribery management system (ABMS). Suppliers are screened for compliance with anti-corruption and sustainability criteria. Hydro-Québec is a member of ECPAR (<i>Espace québécois de</i></p>



Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
Policies and processes are communicated internally and externally as appropriate	<p>✓</p> <p>Hydro-Québec actively communicates their policies internally to their employees and externally to their customers and stakeholders.</p> <p>The development of Hydro Québec's Strategic Plan 2022 – 2026 through their Collective Energy initiative incorporated the inputs of 26,800 survey respondents with over 15,200 ideas submitted for consideration in three key areas: green economy, sustainable mobility, and responsible energy usage.</p> <p>Over 7,000 Hydro-Québec employees also participated in the internal consultation process.</p> <p>Externally, sixty representatives from economic, municipal, academic, interests participated in the survey. Involvement from indigenous and business interests was also sought.</p>		<p><i>concertation sur les pratiques d'approvisionnement responsable</i>), a network of sustainable procurement leaders consisting of 20 of Québec's major purchasers and other stakeholders committed to principles of sustainable procurement.</p>
In case of capacity shortfalls, appropriate external expertise is contracted for additional support	<p>✓</p> <p>Hydro Québec has a very broad in-house capacity, including a number of specialised subsidiaries involved in various aspects of the energy transition and a research institute, IREQ, which is home to approximately 500 staff. IREQ also works with a number of external partners including manufacturers, IT companies,</p>		

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
		<p>universities, research centres, other utilities and government organizations.</p> <p>Examples of these partnerships include Ouranos (climate change adaptation), Innergex (renewable energy) and Propulsion Québec (electric and intelligent transportation cluster).</p> <p>At the level of the Eastmain complex, there are numerous examples for external expertise that was engaged in technical, environmental, and social issues.</p>			

**Conformance and Compliance**

The project has no major non-compliances	✓	There are no indications for any major non-compliances.	The project has no non-compliances	✓	There are no indications for non-compliances.
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**Outcomes**

There are no significant unresolved corporate and external governance issues identified	✓	There are no indications of any significant unresolved corporate and external governance issues.	There are no unresolved corporate and external governance issues identified	✓	There are no indications of unresolved corporate and governance issues.
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List of significant gaps against <b>Minimum Requirements</b>	Number of <b>Advanced Requirements</b> met
None	6

**Summary of findings and other notable issues**

Hydro-Québec has demonstrated sound corporate business structures, policies and practices, and addresses transparency, integrity and accountability issues at all company levels. The corporation is operating within a high-performing external governance context and can ensure compliance with provincial/federal legislation and international commitments.

Relevant evidence	
Interview	1, 2, 16, 29, 30
Document	5, 8, 18, 28, 31, 43, 50-53, 57, 122, 123, 174-195, 197-205
Photo	31

## 10 Communications and Consultation



Scope and Principle	
This section addresses ongoing engagement with project stakeholders, both within the company as well as between the company and external stakeholders (e.g. affected communities, governments, key institutions, partners, contractors, catchment residents, etc). The principle is that stakeholders are identified and engaged in the issues of interest to them, and communication and consultation processes maintain good stakeholder relations throughout the project life.	

Background	
Directly affected community-level stakeholders	See sections 4 and 7. The key affected communities are the Cree villages of Nemaska, Mistissini, Waskaganish and Eastmain.
Directly affected institutional-level stakeholders	Institutional stakeholders include <ul style="list-style-type: none"> <li>government agencies at all levels (from local communities to the national level), including specialized agencies such as the Cree Health Board or the Niskamoon Corporation, some of which are jointly managed by the Cree and Hydro-Québec,</li> <li>businesses, civil society organizations such as NGOs, media, and others with a direct interest in the project.</li> </ul>
Other relevant information	In a wider sense, stakeholders also include the entire population of Québec, as owners and customers of Hydro-Québec and as residents affected by Hydro-Québec's facilities, as well as people in Hydro-Québec's export markets and people interested in northern environments and the Cree culture.

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
Assessment			
Ongoing or emerging issues relating to hydropower facility communications and consultation have been identified	✓ Local issues are primarily identified by Hydro-Québec's community liaison officers, while the corporate communications department identifies issues of broader interest. There are also processes to identify issues relevant to communications with customers, staff, the media, and others.	The stakeholder mapping takes broad considerations into account	✗ The stakeholder map used at the Eastmain complex is produced by Hydro-Québec's unit for relations with non-native communities. It is for the broader region and not detailed regarding the Eastmain complex, and it is not integrated with the stakeholder information of the unit for relations with native communities. While Hydro-

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
Requirements and approaches are determined through a periodically updated assessment process involving stakeholder mapping	✓	Hydro-Québec's active construction projects apply a broad range of communication tools, based on an evaluation of relevant requirements and approaches. In contrast, operating facilities such as the Eastmain complex do not undertake facility-specific assessments. Stakeholder mapping is undertaken and periodically updated at the level of larger regions with multiple facilities; in the case of Eastmain, for Abitibi-Témiscamingue/Nord-du-Québec.			Québec staff, and in particular the liaison officer based in Chibougamau (the largest town in Nord-du-Québec, regularly visited by the Cree), have excellent knowledge of and contacts with native communities, the absence of an integrated and documented stakeholder map/analysis is a <b>significant gap</b> at the level of Advanced Requirements.
Effectiveness is monitored	✓	Effectiveness of communications is monitored through periodic surveys, and informally through other stakeholder interactions.			
Management					
Communications and consultation plans and processes are in place to manage communications and engagement with stakeholders	✓	Some elements of communications plans, and multiple communications and consultation processes, are in place. At the corporate level, Hydro-Québec has resources (e.g. an assigned spokesperson for the facilities in each region) and plans (e.g. for safety-relevant events such as forest fires and spilling) available. Interactions with external stakeholders are recorded and followed up through database applications (Espace RAM and Borealis).	Communication and consultation plans and processes show a high level of sensitivity to communication and consultation needs and approaches for various stakeholder groups and topics	✗	While Hydro-Québec has comprehensive plans and processes at the corporate level and for construction projects, there is no comprehensive communication plan for operating facilities such as the Eastmain complex or the James Bay complex, of which Eastmain is a part. Land users mentioned that they are not always aware of information that is of interest to them and that is available, in some cases in fact through research and monitoring generated or supported by the project (e.g regarding reasons for decline of animal

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
			<p>populations such as Caribou, water quality changes in Rupert River). There are partial communications plans (e.g., for changes in releases from the Rupert diversion structure, for emergencies) but these are largely driven by requirements under the community agreements, on a 'need-to-communicate' basis, not part of a proactive, systematic approach. This is a <b>significant gap</b> at the level of Advanced Requirements.</p> <p>The Hydro-Québec team and the staff of other entities with responsibilities for aspects of the Eastmain complex, such as the Niskamoon Corporation, are well connected with communities and have respectful, often personal relationships with stakeholders. Lessons learnt from the Eastmain complex have been integrated into best practice guides on public consultation for the James Bay region, which emphasize respectful, sensitive, early, and continuing engagement.</p>
They include an appropriate grievance mechanism	✓ Stakeholders can use a number of grievance mechanisms, including those for workers, customers and suppliers of Hydro-Québec. Local community members typically communicate their grievances, suggestions, requests etc. through their representatives or through the community liaison officers.	Processes are in place to anticipate and respond to emerging risks and opportunities	✓ There are various examples for forward-looking communications processes. Hydro-Québec sees new standards related to sustainability, such as PAR certification, as opportunities both for continuous improvement and for communications. The corporation also successfully

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
	<p>The Borealis platform, a database platform for external stakeholders from local individuals to the media and government agencies, is also used to manage grievances.</p>		<p>employs new channels such as chats and social media postings to engage the public and employees.</p> <p>Communications challenges include, for example, the communication of positive Indigenous relations and of low GHG emissions to sceptical audiences. Hydro-Québec’s approach is to ‘talk to anyone who will listen’, and to continue to innovate. For example, Hydro-Québec has contributed to pioneering research on reservoir GHG emissions, and is trying out new models of cooperation with Indigenous Peoples, such as joint ownership of a planned transmission line with the Mohawk Council of Kahnawàke.</p>
<p>They outline communication and consultation needs and approaches for various stakeholder groups and topics</p>	<p>✓</p> <p>The different processes address different stakeholder groups and topics, with different levels of detail and issues of interest. For example,</p> <ul style="list-style-type: none"> <li>• the Eelgrass research program issues a periodic newsletter and will organize a symposium in the coastal Cree community of Chisasibi,</li> <li>• a map with no-fly zones for helicopters during the annual goose hunt is produced for community representatives and pilots,</li> <li>• when requested by the community, Hydro-Québec has an information booth at the annual Cree General Assembly,</li> <li>• Rupert River users are informed by text messages about the dates of changed releases at the regulation gates,</li> <li>• a toll-free hotline is available for Hydro-Québec customers and stakeholders,</li> </ul>		

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
		<ul style="list-style-type: none"> <li>annual flyers are produced to remind businesses of procurement opportunities,</li> <li>monthly communications are held between Hydro-Québec and the executives of the regional government (ARBJ), and meetings with the Board of ARBJ are held twice a year,</li> <li>employees and the general public are informed through newsletters, websites (including a comprehensive intranet for staff) and social media. Hydro Québec has engaged a social media company to manage its social media presence and further its customer care and external stakeholder outreach processes.</li> </ul> <p>Further stakeholder engagement measures at the corporate level are described in section 9.</p>			
<b>Stakeholder Engagement</b>					
The project operation stage involves engagement with directly affected stakeholders	✓	As described above.	Engagement is inclusive and participatory	✓	There are no indications that any affected stakeholders have been excluded from engagement. Stakeholders are participating in multiple decision-making processes related to the project.
Engagement is:					



Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
• appropriately timed and scoped	✓	There are no indications otherwise. Stakeholders expressed satisfaction with timely engagement (e.g. information of tallymen before studies are conducted on their land) and useful information provided.	Negotiations are undertaken in good faith	✓	Key stakeholders confirmed that negotiations by Hydro-Québec representatives (e.g., related to the multiple agreements at the level of the Cree nation, individual Cree communities, and individual tallymen) are undertaken in good faith and have led to mutually acceptable compromises in almost all cases.
• often two-way	✓	Most communication and consultation activities and materials are designed for two-way interactions such as discussions in committees. There have been fewer opportunities for meetings since the Covid-19 pandemic, but there are plans to revive opportunities for personal interactions.			
• undertaken in good faith	✓	There are no indications otherwise.			
The business interacts with a range of directly affected stakeholders to understand issues of interest to them	✓	<p>At the corporate/provincial level, Hydro-Québec uses a number of approaches to understand which issues are most relevant to stakeholders:</p> <ul style="list-style-type: none"> <li>• Surveys among municipal officials, Indigenous Peoples, customers, and workers</li> <li>• Engagement with stakeholders through the 'Collective Energy' initiative</li> <li>• 3-yearly consultation to underpin the materiality analysis for the Sustainability Report</li> <li>• Advisory Committees</li> </ul> <p>At the local level, Hydro-Québec's community liaison officers for native</p>	The assessment and management process for downstream flow regimes has involved appropriately timed and two-way engagement with directly affected stakeholders	✓	The process has been and continues to be undertaken in collaboration with Cree stakeholders (see section 11).

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
		and non-native communities as well as its representatives on joint boards and committees are collecting information on issues of interest.			
Ongoing processes are in place for stakeholders to raise issues and get feedback	✓	Multiple processes are available for stakeholders to raise issues and get feedback, from Hydro-Québec directly or from other organizations with responsibility for aspects of the Eastmain complex.	Ongoing processes are in place for stakeholders to raise issues with downstream flow regimes and get feedback	✓	See above and section 11.
Ongoing processes are in place for:					
• environmental and social issues	✓	Environmental and social issues are discussed between stakeholders and with Hydro-Québec in various fora such as the joint Monitoring Committee, Rupert River Water Management Board, Niskamoon Corporation Board, and Steering Committee of the Coastal Habitat Comprehensive Research Project.	Feedback on how issues raised have been taken into consideration has been thorough and timely	✓	Stakeholders have largely confirmed that feedback is thorough and timely, although Hydro-Québec as a large organization can take time to respond. In some instances, dissatisfaction with responses appear to be related to issues from before the Eastmain complex or outside the scope of this assessment.
• project-affected communities	✓	Local community members can raise their issues through a number of channels, such as their representatives on councils, boards and committees, or directly with Hydro-Québec’s liaison officers and other staff. The ARBJ considers that engagement processes have improved in recent years.	Project-affected communities have been involved in decision-making around relevant issues and options	✓	See section 7 for native communities. Non-native communities are also involved in decision-making, e.g. about the allocation of resources from the Eastmain Fund (section 4) and ongoing issues such as road maintenance and safety, and local procurement.
• resettles and host communities		Not relevant.	Resettles and host communities have been involved in decision-making		Not relevant.
• Indigenous Peoples	✓	See above.			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
• employees and contractors on human resources and labour management issues	✓	There are adequate processes in place both for workers and for contractors; see sections 2 and 9.	around relevant issues and options		
• management of climate risks	✓	Hydro-Québec is cooperating with a range of research and government agencies on climate issues; see section 12.			
Channels of communication with Indigenous Peoples are maintained	✓	Various channels have been maintained since the agreements in the early 2000s. However, one of the most important channels, the Monitoring Committee, may be discontinued when the monitoring programme comes to an end.	Directly affected Indigenous Peoples have been involved in decision-making around relevant issues and options	✓	See above and section 7.
These channels are:					
• appropriately timed	✓	In general, the coordination bodies discuss issues such as monitoring studies or unusual releases, and information is provided to local communities, before steps are taken.			
• culturally appropriate	✓	Communication channels and consultation procedures are co-designed by the Cree. There are multiple examples of culturally appropriate messages and materials provided to the Cree, and respect for Cree culture shown in interactions.			
• two-way	✓	The Cree have many opportunities to provide their views on matters related to the project.			
A mutually-agreed disputes procedure is in place with Indigenous Peoples	✓	Following their agreements in the early 2000s that settled pre-existing disputes, the Cree and Hydro-Québec			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
		set up several dispute resolution mechanisms. The parties have aimed to avoid invoking the formal mechanisms, by resolving disagreements before they turn into conflicts. The main mechanism for this is the Niskamoon Corporation. If a dispute escalated, it could be dealt with following Chapter 8 of the 2004 Agreement concerning a new relationship between Hydro-Québec/SEBJ and the Crees of Eeyou Istchee, first through the Cree-Hydro-Québec Standing Liaison Committee, and secondly through mediation.			
Public disclosure:					
• the business makes significant project reports publicly available	✓	Hydro-Québec operates with a high level of transparency, and most project documents such as EIAs and environmental follow-up reports are made public, either under regulatory requirements or voluntarily.	The business makes significant project reports publicly available	✓	As described under Minimum Requirements.
• the business publicly reports on project performance, in some sustainability areas	✓	The annual corporate-level Sustainability Report covers some aspects of project performance. More project-specific information can be found across various publications such as monitoring reports and minutes of meetings of the various coordination bodies.	The business publicly reports on project performance in sustainability areas of high interest to its stakeholders	✓	The Sustainability Report is GRI-compliant and externally verified, and focused on areas of high interest, following a materiality process at the provincial level. Issues for monitoring and reporting at the project level are selected in collaboration with stakeholders.
• power density calculations, estimated GHG emissions, and / or the results of a site-	✓	Hydro-Québec has directly published or supported publicly available	The assessment of project resilience is publicly disclosed	✓	See section 12. While there is not yet a project-specific resilience assessment, Hydro-Québec has supported publicly

Minimum Requirements		Advanced Requirements		
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations	
specific assessment are publicly disclosed		research on GHG emissions, including specifically for the Eastmain reservoir.		available research and has published its Climate Change Adaptation Plan and other relevant documents.

#### Conformance and Compliance

Processes and objectives relating to communications and consultation have been and are on track to be met with:		There are no non-compliances	✓	There are no indications for any non-compliances.
• no major non-compliances	✓			
• no major non-conformances	✓	There are no non-conformances	✓	There are no indications for any non-conformances.
Communications related commitments have been or are on track to be met	✓			

List of significant gaps against <b>Minimum Requirements</b>	Number of <b>Advanced Requirements</b> met
None	13

Summary of findings and other notable issues
There is broad stakeholder satisfaction with Hydro-Québec's approach to communications and consultation, and specifically the consensus-oriented approach with local stakeholders around the Eastmain complex. The company is highly transparent and makes a large amount of information publicly available. There are some opportunities to improve communications at the project level, by basing it on more systematic stakeholder mapping and a more proactive communications plan.

Relevant evidence	
Interview	9-12, 29, 30, 36-38, 41-46
Document	3, 5, 44, 76, 88, 151, 173, 196, 206-240
Photo	14-16, 30, 116, 117, 137

## 11 Hydrological Resource



<b>Scope and Principle</b>	
<p>This section addresses hydrological resource availability and reliability, reservoir management, and downstream flow regimes in relation to the operating hydropower facility. The principle is that power generation planning and operations take into account hydrological resource availability and reliability in the short- and long-term, that the reservoir is well managed taking into account power generation operations, environmental and social management requirements, and multi-purpose uses where relevant, and that issues with respect to downstream flow regimes are identified and addressed.</p>	

<b>Background</b>	
<b>Hydrology and flows</b>	
Average flow at dam (m <sup>3</sup> / s)	1,019 (at dam site, including flows from Eastmain and Rupert rivers)
Minimum monthly average flow (m <sup>3</sup> / s)	401.7
Maximum monthly average flow (m <sup>3</sup> / s)	721.5
Lowest observed flow (m <sup>3</sup> / s)	74.2 (March)
Highest observed flow (m <sup>3</sup> / s)	2,351.5 (June)
Design flow (m <sup>3</sup> / s)	EM-1: 840 m <sup>3</sup> /s, EM-1a: 1,344 m <sup>3</sup> /s
Affected river reaches (start/end and how affected)	Rupert River from KP 314 downstream to Waskaganish; Eastmain River from Eastmain dam to tail end of the Opinaca reservoir
Proposed downstream flow regimes for environmental or social objectives	A minimum flow release with seasonal variations was designed for the Rupert River, to meet environmental and social objectives through negotiated agreements with the Cree.
<b>Reservoir (Eastmain)</b>	
Reservoir length (km)	100 km approx.
Minimum operating level MOL (masl)	274.11
Normal operating level (masl)	274.11 – 283.11
Full supply level FSL (masl)	283.11
Reservoir area at FSL (km <sup>2</sup> )	603
Reservoir area at MOL (km <sup>2</sup> )	334
Volume at FSL (million m <sup>3</sup> )	6,940
Volume at MOL (million m <sup>3</sup> )	2,730
Average retention time in days	Not provided

<b>Other relevant information</b>	The Rupert River diversion was created at KP 314 to redirect 71% of historic flows into the Eastmain Reservoir through the creation of the Rupert forebay, tailing bay and connecting tunnel. The Rupert River diversion results in a reduction of mean annual flows to 184.7 m <sup>3</sup> /s or 29% of historic flows at the point of diversion. Minimum flow requirements are equivalent to the average summer flow of 127 m <sup>3</sup> /s in the winter and summer months, 416 m <sup>3</sup> /s during the spring freshet and 267 m <sup>3</sup> /s in the fall months. Water levels in some river reaches are maintained through eight weirs. Through inflows from downstream tributaries, the flow at the mouth of the river at Waskaganish is 48% of the mean annual flow before the diversion.
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Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
<b>Assessment</b>			
Ongoing or emerging issues in the following areas have been identified:			
• hydrological resource availability and reliability	✓	The understanding of hydrology for the project (principally flows in the Eastmain and Rupert rivers) was based on historical data from 1961-2003, as well as continuous monitoring of inflows since the start of construction.  This included an assessment of variability over different time scales. The understanding of variability has continued to improve since the design, with a number of dry years such as 2010 and wet years such as 2014-2016.	Issues that may impact on water availability or reliability have been comprehensively identified
• reservoir management	✓	Diversion of the Rupert River through the Rupert dam at KP 314 created the Rupert forebay. Water level fluctuation in the Rupert forebay is in the order of 4.3 m in the winter, and 3.3 m in the summer. The 2.9 km Tommy Neeposh transfer tunnel (max 800 m <sup>3</sup> /sec; mean flow	There are no relevant abstractions or changes in land use in the catchment that could affect water availability. The probabilities of wet and dry years have been assessed. Since hydrological variability is very similar to the rest of the La Grande complex, it has been comprehensively studied over several decades.

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
	<p>of 453 m<sup>3</sup>/s) that is dug underneath Lac de la Sillimanite connects the Rupert forebay to the Rupert tailbay, with fluctuations in the order of 2 m, which drains to the Eastmain Reservoir.</p> <p>The Eastmain Reservoir is drawn down through the winter to a minimal level in May, when the spring runoff increases levels to normal operating levels (approx. 90% of FSL) around the month of July. The reservoir then fills completely with the fall rains, before being drawn down again during the winter months. This pattern has been reliably repeated over the years. Wet years result in increased spilling, which is optimized between all Hydro-Québec's reservoirs. No significant other uses of the reservoirs have been identified.</p>		
<ul style="list-style-type: none"> <li>downstream flow regimes</li> </ul>	<p>✓</p> <p>Issues related to releases to the Rupert River include fish habitat, navigation, flood protection, and hunting conditions on the riverbanks.</p> <p>The section of the Eastmain River between the dam, tailraces of EM-1 and EM-1a, and Opinaca reservoir is very short, and no issues have been identified in this reach.</p>	<p>✓</p> <p>Scenarios, uncertainties and risks for water availability and reliability are routinely and extensively evaluated over the short- and long-term</p>	<p>Scenarios, uncertainties, and risks such as floods and droughts are evaluated using short term and long term stochastic and deterministic models.</p>



Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
If management measures are required then monitoring is being undertaken to assess if management measures are effective:					
• reservoir management	✓	Water levels in the Eastmain Reservoir and Rupert diversion bays are monitored and managed to minimize spilling and remain within agreed constraints. There have been multiple studies to assess the effects of water levels on different objectives such as fish habitat, navigation, ice cover, and shoreline erosion.			
• downstream flow regimes	✓	Flow releases to the Rupert River are monitored at the Rupert diversion dam. There have been multiple studies to assess the effects of flows on different objectives.			
Monitoring is being undertaken of hydrological resource availability and reliability	✓	Three types of monitoring are being done including hydrometric stations and gauging stations – see below.	Identification of ongoing or emerging reservoir management issues takes into account both risks and opportunities	✓	A number of reservoir-related issues have been monitored from the beginning of operations or have been identified at a later stage. For example, navigation corridors were created in the reservoir through selective clearing, and their condition is checked regularly. Debris management is undertaken around the intakes and the spillway when necessary. Ice thickness monitoring is undertaken for safety purposes.
Inputs to this monitoring include:			Issues identification relating to downstream flow regimes takes into account both risks and opportunities	✓	Issues identified over time along the reduced flow reaches of the Rupert River include the conditions of the ice in winter, and the impacts of reduced

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
					flows on migratory behaviour of fish, the implications for fishing success and on goose hunting.
• field measurements	✓	Hydro-Québec operates a number of hydrometric, weather and gauging stations in the Eastmain complex. Real time data is transmitted using a GOES satellite platform. A validation team ensures good quality data.	An assessment has been undertaken that includes identification of the flow ranges and variability to achieve different environmental, social and economic objectives based on field studies as well as relevant scientific and other information		The minimum flows maintained in the Rupert River are designed to meet ecological and social objectives established in agreement with the Cree. Other objectives were also achieved including navigation, fishing, preservation of important fish spawning ground and maintaining important aquatic grass habitats. Variability in the flows is maintained through spilling and inflows from tributaries.
• appropriate statistical indicators	✓	Data are processed and trends established using appropriate indicators.			
• issues which may impact on water availability or reliability	✓	Weather and flows variability is monitored and daily hydro-meteorological forecasts are produced.			
• a hydrological model	✓	Hydro Québec uses a number of hydrological and short-, medium- and long-term reservoir simulation and optimization models.  The HASMI model was developed by Hydro-Québec and has been in use for 30 years for daily forecasting on natural inflows on 92 watersheds. Hydrological simulations are determined from daily observations of four main meteorological variables: rain, snow, minimum and maximum temperature. The model has since been upgraded to HSAMI+ which factors in wetlands and ice build-up on reservoirs.			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
		Modelling results show the following trends for the project area: a decrease in the number of days with snow on the ground, greater total snow accumulation and changes in the hydrograph pattern (earlier spring flood, increased annual streamflow and higher flows in winter).			
Management					
Measures are in place to guide generation operations that are based on:					
• analysis of the hydrological resource availability	✓	Real time hydrological and meteorological data analysis is used to guide generation. Stochastic reservoir operation tools are used to assess future inflows uncertainty, to minimize spillage and to determine drawdown-refill cycles. Some models are focused on the Rupert-Eastmain-Opinaca system while others are used to analyse the entire La Grande complex.	Planning of generation operations has a long-term perspective	✓	Both short-term and long-term modelling are used to plan operations in the La Grande complex. Long-term planning is implemented through the SDDP (Stochastic Dual Dynamic Programming) tool. The complete understanding of La Grande River and its interaction with the Eastmain tributary allows a better assessment of water available, energy demand, efficiency of use, and environmental and social constraints.
• a range of technical considerations	✓	The flow routing and optimization models are based on detailed technical information on all components of the La Grande complex.	Planning of generation operations fully optimises and maximises efficiency of water use	✓	Hydro-Québec uses a suite of internal experts and modelling tools to assure efficiency of water use.
• an understanding of power system opportunities and constraints	✓	Power demand and transmission constraints are incorporated into generation planning, to optimize joint use of all generation facilities.	Planning of generation operations has the flexibility to adapt to anticipate and adapt to future changes	✓	The planning tools used by Hydro-Québec can easily adapt to changing hydrological regimes or changes in other constraints.

Minimum Requirements			Advanced Requirements			
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations	
Measures are in place to manage identified reservoir management issues	✓	Hydro-Québec manages its reservoirs and downstream flows to optimize water use for generation while respecting environmental and social constraints. In the case of the Eastmain complex, the constraints are primarily derived from the Nadoshtin, Boumhounan and Sarcelle agreements, and public/dam safety interests.	Processes are in place to anticipate and respond to emerging risks and opportunities for reservoir management	✓	Hydro-Québec has a dynamic approach using real time data and modelling to manage conditions in the Eastmain reservoir. Risks and opportunities not related to generation, are covered by the Monitoring Committee (MC), which was set up to discuss results of ongoing follow-up studies and performance of mitigation measures.	
Measures are in place to address identified downstream flow issues	✓	See above.	Processes are in place to anticipate and respond to emerging risks and opportunities for downstream flow regimes	✓	The Rupert River Management Board (RRWMB) was set up to resolve issues relating to water management in the Rupert River. Together with the MC, these two joint mechanisms between the Cree and Hydro-Québec have been able to anticipate and resolve different interests in downstream releases.	
Where formal commitments have been made to downstream flow regimes, these are publicly disclosed	✓	The Rupert River minimum flow regime and water level control structures have been publicly disclosed through multiple channels.	Commitments are made in relation to downstream flow regimes that include the flow objectives; the magnitude, range and variability of the flow regimes; the locations at which flows will be verified; and ongoing monitoring	✓	Through the various flow monitoring and modelling programs, the magnitude, range and variability of the flow regime is maintained in the Rupert River. Monitoring of conditions in the watershed is ongoing through to 2023.	
Conformance and Compliance						
Processes and objectives in place to manage each of the following have been and are on track to be met:			There are no non-compliances relating to:			
• reservoir management, with no major non-compliances	✓	There are no indications of major non-compliances.	• reservoir management	✓	There are no indications of non-compliances.	

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
• reservoir management, with no major non-conformances	✓	There are no indications of major non-conformances.			
• downstream flow regimes, with no major non-compliances	✓	There are no indications of major non-compliances.	• downstream flow regimes	✓	There are no indications of non-compliances.
• downstream flow regimes, with no major non-conformances	✓	There are no indications of major non-conformances.			
Commitments relating to the following have been or are on track to be met:			There are no non-conformances relating to:		
• reservoir management	✓	Commitments have been met.	• reservoir management	✓	There are no indications of non-conformances.
• downstream flow regimes	✓	Commitments have been met.	• downstream flow regimes	✓	There are no indications of non-conformances.
Outcomes					
Downstream flow regimes take into account environmental, social and economic objectives	✓	Flows and water level are maintained in the Rupert River, to meet environmental and social objectives important to the Cree, while adding approximately 8.5 TWh of annual generation, at the Eastmain power stations as well as downstream at the Sarcelle and La Grande power stations.	Downstream flow regimes and commitments are an optimal fit amongst environmental, social and economic objectives within practical constraints of the present circumstances	✓	Downstream commitments have been established with the Cree through signed agreements and the establishment of a robust governance structure to meet objectives of both Hydro-Québec and the Cree. The original agreement has not been modified although suggestions have been raised at various points. For example, the timing of releases was discussed to avoid interference with goose hunting. However, the RRWMB which has proven to be an effective mechanism for reaching consensus on downstream releases in the Rupert River decided not to change the mechanism that trigger releases
Where relevant, they also take agreed transboundary objectives into account,	✓	Not applicable.			

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
			during the spring freshet. This indicates that the original release curve is still considered an optimal fit.

List of significant gaps against <b>Minimum Requirements</b>	Number of <b>Advanced Requirements</b> met
None	16

Summary of findings and other notable issues
Hydro-Québec have implemented a comprehensive program to manage downstream flows in the Rupert River while increasing flows by up to 800 m <sup>3</sup> /s into the Eastmain reservoir and then downstream through the La Grande complex, to maximize available power generation. This balance has been achieved through a series of negotiated agreements with Cree to respect their needs and use of the land for traditional purposes, and through a complex engineered solution of dykes and weirs to maintain seasonal flow requirements in the Rupert River. The Rupert River diversion to the Eastmain reservoir also incorporated a unique tunnel system to avoid impacts to surface water bodies and drainage. Joint mechanisms established between the Cree and Hydro-Québec and dialogue through the Monitoring Committee and Rupert River Water Management Boards have been able to anticipate and resolve different interests in downstream releases.

Relevant evidence	
Interview	22, 23, 36-38
Document	1-3, 16, 17, 20, 25-27, 66, 67, 69, 88, 244-276
Photo	1-4, 40-45, 48, 49, 52, 58-60, 66-69, 74-95, 102-107, 135

## 12 Climate Change Mitigation and Resilience



<b>Scope and Principle</b>	
This section addresses the estimation and management of the project's greenhouse gas (GHG) emissions, analysis and management of the risks of climate change for the project, and the project's role in climate change adaptation. The principle is that the project's GHG emissions are consistent with low carbon power generation, the project is resilient to the effects of climate change, and the project contributes to wider adaptation to climate change.	

<b>Background</b>	
<b>Climate Change Mitigation</b>	
Capacity (MW)	1,248
Average reservoir area (representing area of flooded land, net of pre-impoundment water body) (km <sup>2</sup> )	Réservoir de la Paix des Braves 603 km <sup>2</sup> , Rupert bays 346 km <sup>2</sup> , total 949 km <sup>2</sup>
Power density (W / m <sup>2</sup> )	1.3 (including both Eastmain reservoir and Rupert diversion bays)
Emissions intensity (gCO <sub>2</sub> e / kWh)	-7.7 according to G-res tool validation report # 3.112264
National and regional policies, plans and commitments relevant to mitigation	The Canadian Net Zero Emissions Accountability Act (June 29, 2021) legally commits Canada to achieve net-zero emissions by 2050. In March 2022, the Government of Canada published the 2030 Emissions Reduction Plan that provides a roadmap to how Canada will meet its enhanced Paris Agreement target to reduce emissions by 40-45% from 2005 levels by 2030.
<b>Climate Change Resilience</b>	
Hydrological data available for the project site and the basin, and observed climate trends	Yes, see topic 11
Regional and basin-level climate models relevant to the project location, if any	Regional climate models have been used as background information for a risk analysis for 5 zones of Québec, undertaken on behalf of Hydro-Québec.
Any climate change predictions for the project location, and degree of consistency	Hydrological projections are produced according to best practices since more 10 years by Hydro-Québec in collaboration with Ouranos. Inflows for each sub watershed are produced and updated with several climate ensembles such as CMIP3, CMIP5 and CORDEX. Representation of water management and routing is lacking in the projections, however, and therefore the use at the project site level is limited.
National policies, plans and commitments relevant to adaptation and resilience	By the end of 2022, the Government of Canada will prepare a National Adaptation Strategy which <i>“will outline how the Canadian economy and society can be more resilient and prepared for the impacts of climate change. It will strengthen and improve health outcomes, build and maintain infrastructure, steward the environment, support a strong economy, and reduce the risk of climate-related disasters.”</i>

	The most recent provincial strategy is the 2013–2020 Québec Government Strategy for Climate Change Adaptation, which laid out a master plan for government intervention in climate adaptation.
<b>Other relevant information</b>	In 2001, following a number of extreme weather events that highlighted the vulnerability of Québec to climate change, Ouranos was created as a joint initiative of the Québec government, Hydro-Québec and Environment Canada. Ouranos aims to provide Québec and the rest of Canada with expertise in both climate science and adaptation strategies.

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
<b>Assessment</b>			
<b>Climate Change Mitigation</b>			
If power density is below 5 W/m <sup>2</sup> , net GHG emissions (gCO <sub>2</sub> e) of electricity generation are calculated, independently verified and periodically updated	✓	An externally validated G-res tool assessment of the Eastmain reservoir and the Rupert diversion bays was prepared and showed the facility is a net sink for carbon emissions with – 7.7 g CO <sub>2</sub> eq/kWh.	<p>A site-specific assessment is not required.</p> <p>Hydro-Québec has been measuring GHG emissions at its facilities since 1993. The Eastmain facility has been extensively studied and numerous academic publications have been made. Between 2003-2009, over 120,000 measurements showed that diffusive fluxes dominate with less than 1% of total emissions representing degassing and bubbling. Methane emissions represented less than 1% of total GHG emissions (excluding GWP100 factor).</p> <p>Across its operations more than 500,000 gross GHG emission measurements have been made, at 31 Hydro-Québec generating stations and 90 lakes or rives. Studies have shown that GHG emissions peak after reservoir filling and tend to decline to natural lake levels within 10 years.</p>
If power density is below 5 W/m <sup>2</sup> and estimated emissions are above 100 gCO <sub>2</sub> e/kWh, a site-specific assessment of GHG emissions is undertaken and periodically updated	✓	Not applicable.	



Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
<b>Climate Change Resilience</b>			
An assessment of the project's resilience to climate change is undertaken and periodically updated	<p>✓</p> <p>Hydro-Québec has had a long-term interest in climate change beginning with a series of extreme weather events in the province, especially the 1996 Saguenay flood and the 1998 ice storm. These natural disasters highlighted Hydro-Québec's vulnerability to climatic hazards and led to an assessment of the impact of climate change on the intensity and frequency of these extreme weather situations.</p> <p>Since 2001, Ouranos and Hydro-Québec have completed numerous research projects relating to climate change and adaptation. Hydro-Québec now also operates its own research centre and continues to work closely with Ouranos.</p> <p>As part of Hydro-Québec's Climate Change Adaptation Plan 2022-2024, a risk analysis for the entire hydropower fleet was undertaken, including specific risks and adaptation measures for the James Bay complex of which Eastmain is a component. More project-focused studies that analyse both risks and resilience are planned for the next iteration of the Climate Change Adaptation Plan.</p>	<p>✗</p> <p>Assessment of resilience incorporates sensitivity analysis, project specific hydrological modelling using recognised climate models</p>	<p>✗</p> <p>Hydro-Québec's Climate Change Adaptation Plan 2022-2024 brings a comprehensive approach to analysis of physical risks to operations and to adaptation at the corporate level. The governance structure under the coordination of the Sustainability Department includes a steering committee, a coordinating committee and a technical and scientific working committee which includes members from various groups within the company, Hydro-Québec's research centre and Ouranos.</p> <p>Hydro-Québec's approach is based on best practices in climate science and utilizes the RCP 8.5 high emissions scenario and the RCP 4.5 moderate emissions scenario, over three-time horizons (2030s, 2050s, 2080s). In a future update of the Plan, Hydro-Québec plans to use Shared Socio-economic Pathways (SSPs) for the emissions scenarios.</p> <p>While hydrological projections have been produced and updated for more than 10 years, the lack of representation of water management and routing limit their use at the project site. Although studies have</p>

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
The assessment:					been initiated, project specific hydrological modelling using recognised climate models is not yet available, which is a <b>significant gap</b> against advanced requirements.
• incorporates an assessment of plausible climate change at the project site	✓	Plausible emissions scenarios and their climate implications have been reviewed for the James Bay complex.			
• identifies a range of climatological and hydrological conditions at the project site	✓	Current scientific knowledge about future climatological and hydrological conditions in the James Bay area has been taken into account in the risk assessment.			
• applies these conditions in a documented risk assessment or stress test	✓	<p>As part of their Climate Change Adaptation Plan 2022-2024, Hydro-Québec has identified 26 risks affecting their operations. Of these risks, the following apply to generation and to the project:</p> <ul style="list-style-type: none"> <li>• Changes to design standards</li> <li>• Insufficient evacuation capacity</li> <li>• Decrease in functionality, reliability and the life span of the control structures</li> <li>• Degradation of the physical integrity of embankment retaining structures and potential instability of concrete retaining structures</li> <li>• Decrease in the functionality of outdoor penstocks and surge tanks</li> <li>• Flooding from upstream or downstream of a power plant</li> <li>• Increased risk of forest fires</li> </ul>			

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
The risk assessment or stress test encompasses:			The project's opportunities to provide adaptation services are considered on an ongoing basis	✓	As a single purpose rather than multi-purpose project, the Eastmain complex will have very limited opportunities to provide adaptation services. If such opportunities emerge in the future, for example regarding the management of releases for the Rupert River, a management structure is already in place through the RRWMB.
• dam safety	✓	Potential risks to design and operations have been assessed at a corporate level, with a sufficiently detailed regional perspective for the James Bay area.			
• other infrastructural resilience	✓	Potential risks to transmission lines, drainage systems, access, telecommunications, transport and maintenance have been assessed at a corporate level, with a sufficiently detailed regional perspective for the James Bay area.			
• environmental and social risks	✓	Risks to vegetation management and the effects of forest fires have been assessed at a corporate level, with a sufficiently detailed regional perspective for the James Bay area.			
• power generation availability	✓	Hydro-Québec and Ouranos have done a number of assessments and developed methodologies to understand the impacts of climate change on power generation. While this has not been applied specifically to the Eastmain facility, this is not considered a gap at the minimum requirements level, because runoff is generally expected to increase.			
<b>Management</b>					
<b>Climate Change Mitigation</b>					

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
If GHG emissions estimates assume design and management measures, these measures are in place	✓	Emissions estimates do not rely on any specific design and management measures.	Management measures are in place to respond to risks and opportunities including offsetting emissions	✓	Hydro-Québec aims to become carbon neutral by 2030 by reducing emissions from its activities as much as possible. To this end, it plans to electrify its fleet of vehicles, convert stand-alone grids to renewable energy sources, and reduce insulation gas leakage.
			Plans are in place to monitor parameters used in GHG emissions estimates or to monitor GHG stocks	✓	Extensive monitoring of GHG emissions has been done at Eastmain, and this is now being expanded across the Hydro-Québec fleet.
<b>Climate Change Resilience</b>					
Measures are in place to avoid or reduce identified climate risks	✓	In 2021, Hydro-Québec created an inventory of assets and activities that could be affected by climate conditions and identified the main risks associated to climate change. This led to the preparation of a Climate Change Adaptation Plan 2022-2024 that includes potential adaptation measures to address the identified 26 risks.	Measures take account of a broad range of risks and interrelationships	✓	Adaptation measures at the project level do not have to address a broad range of interrelationships since Eastmain is a single-purpose project.  Hydro-Québec will continue to expand their Climate Change Adaptation Plan to broaden their assessment of risks to include other business areas such as solar power plants and battery storage. They are planning to strengthen the synergy with other corporate initiatives including decarbonization and biodiversity adaptation to climate change.
			Processes are in place to respond to unanticipated climate change	✓	By definition, there is limited information on potential impacts of unanticipated climate change and the probabilities of such events. No

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
					specific analyses have been undertaken by Hydro-Québec to date. Potential climate change impacts such as increased or reduced flows, outside the range expected by current climate models, would be detected through the monitoring of flows and generation. Its design with a substantial storage capacity increases the project's ability to respond, and Hydro-Québec could also potentially respond by shifting generation across its fleet of generating stations.
			Plans are in place to provide adaptation services if necessary	✓	No adaptation services are currently offered by the Eastmain complex. However, through the 2022-2024 Climate Change Adaptation Plan, Hydro Québec is considering potential adaption services on selective reservoirs, where relevant (currently more likely in the south of the province).
<b>Conformance and Compliance</b>					
<b>Climate Change Mitigation</b>					
Processes and objectives relating to mitigation have been and are on track to be met with:			There are no non-compliances	✓	There are no indications for any non-compliances.
• no major non-compliances	✓	No indications of non-compliances			
• no major non-conformances	✓	No indications of non-conformances	There are no non-conformances	✓	There are no indications for any non-conformances.

Minimum Requirements			Advanced Requirements		
Requirement is met: yes (✓) or no (✗)		Findings and Observations	Requirement is met: yes (✓) or no (✗)		Findings and Observations
Mitigation-related commitments have been or are on track to be met	✓	Hydro-Québec aims to be carbon neutral by 2030, and the Eastmain complex is already contributing to this commitment.			
<b>Climate Change Resilience</b>					
Processes and objectives relating to resilience have been and are on track to be met with:			There are no non-compliances	✓	There are no indications for any non-compliances.
• no major non-compliances	✓	No indications of non-compliances			
• no major non-conformances	✓	No indications of non-conformances	There are no indications for any non-conformances	✓	There are no indications for any non-conformances.
Resilience-related commitments have been or are on track to be met	✓	Hydro Québec will continue to take an adaptive approach to climate change resilience through the 2022-2023 Climate Change Adaptation Plan.			
<b>Outcomes</b>					
<b>Climate Change Mitigation</b>					
The project's GHG emissions are demonstrated to be consistent with low carbon power generation	✓	Based on the G-res tool assessment performed by an external expert, in June 2022, the Eastmain complex is considered to be a carbon sink and is thus consistent with low carbon generation.	Project net emissions are minimised or project operations facilitate system emissions reductions	✓	The project makes an important contribution to fossil fuel reduction as it represents a carbon sink and displaces fossil fuel generation.  In their Strategic Plan 2022–2026 Hydro-Québec calculated their avoided emissions in 2021 at 4.8 Mt CO <sub>2</sub> e, with a 2026 target of 7.1 Mt CO <sub>2</sub> e.
<b>Climate Change Resilience</b>					
Findings of the climate change assessment indicate	✓	Hydrological climate projections indicate an expectation of increased	The project is resilient under a broad range of scenarios	✗	Analysis of project-specific resilience under a broad range of scenarios has

Minimum Requirements		Advanced Requirements	
Requirement is met: yes (✓) or no (✗)	Findings and Observations	Requirement is met: yes (✓) or no (✗)	Findings and Observations
that the project is resilient to climate change	inflows, with a potential benefit to generation. There is a good initial understanding of potential risks.		yet to be conducted, which is a <b>significant gap</b> against advanced requirements.
		The project will contribute to climate change adaptation at a local, regional or national level	✓ With a single purpose reservoir, the project has very limited ability to provide any adaptation services. However, Hydro-Québec is looking at expanding its potential contributions to adaptation services.

List of significant gaps against <b>Minimum Requirements</b>	Number of <b>Advanced Requirements</b> met
None	13

Summary of findings and other notable issues
The Eastmain complex has exceptionally low emissions and contributes significantly to climate change mitigation. Hydro-Québec has made important contributions to the knowledge on reservoir emissions, specifically from research on Eastmain. Hydro-Québec is also making good progress on understanding and responding to climate risks and opportunities, although project-specific resilience analysis is only at the initial stages.

Relevant evidence	
Interview	7, 19, 20, 39
Document	277-313
Photo	9

## Appendix 1 – Interviews

Ref	Interviewee/s, Position	Organisation	Date	Location
1	Christian Turpin, Conseiller Expertise environnementale – coordonnateur du projet de certification	Hydro-Québec	2022/07/27 2022/06/12-16	Montréal Complexe Eastmain
2	Paul Sauvé, Conseiller Performance environnementale – coordonnateur du projet de certification	Hydro-Québec	2022/07/27 2022/06/12-16	Montréal Complexe Eastmain
3	Julie Simard, Conseillère Soutien environnemental	Hydro-Québec	2022/07/18 2022/09/12-14	Rouyn- Noranda Complexe Eastmain
4	René Dion, Conseiller Expertise environnementale (biologie aquatique)	Hydro-Québec	2022/07/19	Montréal
5	Marie-Ève Lemieux, Chargée de projets - Environnement	Hydro-Québec	2022/07/19 2022/09/12-16	Québec Complexe Eastmain
6	François Bilodeau, Conseiller Expertise environnementale (programme mercure)	Hydro-Québec	2022/06/20, 23	Montréal
7	Alain Tremblay, Conseiller Expertise environnementale (GES réservoirs)	Hydro-Québec	2022/08/25	Montréal
8	Mylène Levasseur, Conseillère Expertise environnementale (géomorphologie)	Hydro-Québec	2022/06/20	Montréal
9	Carine Durocher, Conseillère Expertise environnementale (milieu humain)	Hydro-Québec	2022/07/18, 21 2022/09/12-16	Montréal Complexe Eastmain
10	Réal Courcelles, Conseiller Relations autochtones	Hydro-Québec	2022/07/27	Montréal
11	Jimmy Lavoie, Conseiller Relations autochtones	Hydro-Québec	2022/08/23 2022/09/14	Chibougamau Waskaganish
12	Patrick Compartino, Conseiller Relations avec le milieu	Hydro-Québec	2022/07/18	Chibougamau
13	Robert Chevalier, Ingénieur en génie civil (sécurité des barrages)	Hydro-Québec	2022/06/17	Rouyn- Noranda
14	Brigitte Naud, Ingénieure en génie civil (sécurité des barrages)	Hydro-Québec	2022/06/17	Rouyn- Noranda
15	Éric Péloquin, Chef Études de sécurité des barrages	Hydro-Québec	2022/06/17	Montréal
16	Martin Pelletier, Chef Centrales soutien	Hydro-Québec	2022/09/08 2022/09/12-16	Complexe Eastmain
17	Nathalie Riopel, Partenaire d'affaires ressources humaines	Hydro-Québec	2022/07/14	Montréal



18	Daniel St-Arnaud, Conseiller prévention	Hydro-Québec	2022/07/12	Rouyn-Noranda
19	Élyse Fournier, Ingénieure en génie civil (résilience climatiques)	Hydro-Québec	2022/08/06	Montréal
20	Marie-Claude Simard, Cheffe Expert spéc barrage et ouvrages régulateurs hydrauliques et hydrologie (résilience climatiques)	Hydro-Québec	2022/08/06	Montréal
21	Jean-Philippe Martin, Conseiller Expertise environnementale (résilience climatique)	Hydro-Québec	2022/08/06	Montréal
22	Geneviève Gagnon, Ingénieure (gestion hydrique)	Hydro-Québec	2022/06/21	Montréal
23	Éric Crobeddu, Conseiller Hydrométéorologie	Hydro-Québec	2022/06/21	Montréal
24	Michel Plante, médecin - Santé et Ressources humaines	Michel Plante Enr.	2022/06/23 2022/07/18 2022/09/19	Montréal
25	Ian Cameron, Conseiller plans des mesures d'urgence	Hydro-Québec	2022/06/20	Rouyn-Noranda
26	Dominique Langlois, Coordinatrice mesures d'urgence	Hydro-Québec	2022/06/20	Saint-Jérôme
27	Jean-Philippe Gilbert, Conseiller Expertise environnementale (biologie terrestre)	Hydro-Québec	2022/09/15	Montréal
28	Martin Perron, Conseiller Expertise environnementale (archéologie)	Hydro-Québec	2022/09/15	Montréal
29	Lynn St-Laurent, Conseillère principale Affaires gouvernementales et Institutionnelles	Hydro-Québec	2022/09/12-16	Montréal
30	Gary Sutherland, Conseiller principale Affaires gouvernementales et Institutionnelles	Hydro-Québec	2022/09/12-16	Montréal
31	Rebecca Diamond, Électricienne Appareillage	Hydro-Québec	2022/09/12	Complexe Eastmain
32	Sébastien Lord, Chef Production et maintenance	Hydro-Québec	2022/09/12, 15	Complexe Eastmain
33	Daniel Jobin, Technicien Soutien Génie civil et barrages	Hydro-Québec	2022/09/15	Rouyn-Noranda
34	Daniel Benatar, conseiller propriétés immobilières	Hydro-Québec	2022/09/20	Montréal
35	Karine Duchesne, conseillère main-d'oeuvre autochtone	Hydro-Québec	2022/08/24	Rouyn
36	Pierre Magnan, président	Rupert River Water Management Board	2022/09/07	Trois-Rivières
37	William MacLeod, Chairperson	Niskamoon Corporation	2022/08/24	Nemaska
38	Ernest Moses, Représentant Waskaganish & Niskamoon Officer	Monitoring Committee & Niskamoon Corporation	2022/09/14	Waskaganish

39	Marco Braun, Senior Hydroclimatology Specialist	Ouranos	2022/09/19	Montréal
40	Katrine Turgeon, Professeure en modélisation et écologie aquatique	Université du Québec en Outaouais - ISFORT	2022/09/19	Ripon
41	Marc Dunn, biologist Consultant	Monitoring Committee	2022/09/19	Montréal
42	Jenilee Trapper, Consultante	Waska Ressources	2022/09/15-16	Complexe Eastmain
43	Vincent Castonguay, Président - région Baie-James	Syndicat des technologues Hydro-Québec	2022/09/09	Baie-James
44	René Dubé, Président	Administration régionale Baie-James	2022/08/22	Matagami
45	Wemindji Chief and Council members	Wemindji Council	2023/02/16	Virtual
46	Monitoring Committee members (Cree and Hydro-Québec representatives)	Monitoring Committee	2023/04/13	Virtual
47	Clarence Cowboy, Tallyman	Tallyman	2022/09/14	Waskaganish

## Appendix 2 – Documents

Ref	Author	Year	Title	Notes / links / language
1	Hydro-Québec	2008	Eastmain-1-A and Sarcelle Powerhouses and Rupert Diversion: A hydroelectric project for present and future generations. Information Document.	Topic #1
2	Hydro-Québec		Rapports de Synthèse <ul style="list-style-type: none"> <li>- Aménagement de l'Eastmain-1 2009</li> <li>- Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert - Secteur des biefs 2011</li> <li>- Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert - Centrale de l'Eastmain-1-A 2014</li> </ul>	Topic #1
3	COMEX, MDDEFP	2013	Report on the Public Consultations Held in November 2012 Following Implementation of Hydro-Québec's Eastmain-1-A and Sarcelle Powerhouses and Rupert Diversion Project	Topic #1 / <a href="https://comexqc.ca/wp-content/uploads/Rapport-EM1A-COMEX_EN_web.pdf">https://comexqc.ca/wp-content/uploads/Rapport-EM1A-COMEX_EN_web.pdf</a>
4	Hydro-Québec, MELCC	2017	Cartes navigation ESR	Topic #1
5	Hydro-Québec	2022	Tableau fréquence d'envoi des rapports aux Ministères	Topic #1
6	SEBJ/MPO	2008	Mise sur pied d'un comité technique et scientifique de suivi du régime de débits réservés	Topic #1
7	MDDELCC	2017	Certificat d'autorisation - Correction érosion PK170	Topic #1
8	Hydro-Québec	2018	Clauses environnementales normalisées	Topic #1
9	Hydro-Québec	2016	Suivi d'utilisation du Territoire (suivi des lieux communautaires, chasse et pêche,)	Topic #1
10	Hydro-Québec	2020	Québec Hydropower Generation and the Environment: Review of scientific knowledge and environmental impact mitigation measures, and comparison with other energy technologies	Topic #1
11	Hydro-Québec	2020	Registre des rapports transmis aux Ministères (plan de suivis environnementaux)	Topic #1
12	CONSORTIUM GENIVAR-WASKA et HYDRO-QUÉBEC	2020	Rapport Utilisation du territoire Complexe de l'Eastmain Sarcelle Rupert	Topic #1
13	Hydro-Québec	2015	Rapport final de formation et simulation Eastmain 1	Topic #1
14	Hydro-Québec	2020	Plan d'intervention BL (EM1A)	Topic #1
15	Hydro-Québec	2020	Plan d'intervention EM1	Topic #1
16	Hydro-Québec	2007	Programme de suivi environnemental 2007-2023	Topic #1
17	Hydro-Québec	2013	Aménagement hydroélectrique de l'Eastmain-1 – Activités environnementales 2002-2013	Topic #1
18	Hydro-Québec	2007	Complexe EM-S-R Engagements environnement et conditions des autorisations gouvernementales	Topic #1
19	Hydro-Québec	2008	Programme de suivi de l'habitat du poisson 2007-2023	Topic #1

20	Hydro-Québec	2004	Étude d'impact sur l'environnement Eastmain1A-Rupert-Version française. Volume 1 : Chapitres 1 à 9; Volume 2 : Chapitres 10 à 12; Volume 3 : Chapitres 13 à 15; Volume 4 : Chapitres 16 à 25; Volume 5 : Annexes; Volume 6 : Méthodes; Volume 7 : Cartes — Composantes du projet et milieu naturel; Volume 8 : Cartes — Milieu humain; Volume 9 : Sommaire du plan de mesures d'urgence en cas de rupture des barrages; glossaire à l'annexe A, dans le volume 5	Topic #1
21	Hydro-Québec	1991	Étude d'impact – Volume 1 – Rapport d'avant-projet Parties 1 à 6	Topic #1
22	Hydro-Québec	1991	Étude d'impact – Volume 2 – Rapport d'avant-projet Parties 7 à 10	Topic #1
23	Hydro-Québec	1991	Étude d'impact – Volume 3 – Rapport d'avant-projet Parties 11	Topic #1
24	Hydro-Québec	1992	Étude d'impact – réponses aux questions adressées par le MENVIQ	Topic #1
25	Hydro-Québec	2004	Sommaire de l'étude d'impact sur l'environnement	Topic #1
26	Hydro-Québec	2005	Étude d'impact sur l'environnement Eastmain1A-Rupert – 258.1 / 358.2	Topic #1
27	Hydro-Québec	2004	Étude d'impact sur l'environnement Eastmain1A-Rupert – Rapport de synthèse	Topic #1
28	Hydro-Québec	2021	Hydro-Québec Sustainability Report	Topic #1 / <a href="https://www.hydroquebec.com/sustainable-development/">https://www.hydroquebec.com/sustainable-development/</a>
29	WWF Canada	2017	WWF-CANADA Watershed Report - Northern Québec	Topic #1
30	Hydro-Québec	2001	Summary of Knowledge Acquired in Northern Environments from 1970 to 2000	Topic #1
31	Hydro-Québec	2020	Sustainable Development Plan 2020–2024: Drawing on the Past to Shape the Future	Topic #1
32	Hydro-Québec	2007	Centrale de l'Eastmain-1-A et dérivation Rupert : Engagements environnementaux d'Hydro-Québec et conditions des autorisations gouvernementales <ul style="list-style-type: none"> <li>• Mesures environnementales intégrées à la conception du projet</li> <li>• Mesures d'atténuation, de compensation et de mise en valeur</li> <li>• Suivi environnemental</li> </ul>	Topic #1
33	Hydro-Québec	2022	Hydro-Québec Documentation and Data	Topic #2 / <a href="https://www.hydroquebec.com/documents-data/official-publications/">https://www.hydroquebec.com/documents-data/official-publications/</a>
34	Hydro-Québec	2022	Intranet Hydro-Québec Santé et sécurité – Outils et ressources Santé-Sécurité-Formation et communications	Topic #2
35	Hydro-Québec	2022	Exemples directives/ encadrements corporatifs SST applicables aux centrales EM-1 et EM-1A	Topic #2
36	Hydro-Québec	2022	Formulaire d'accueil des nouveaux employés des centrales EM-1 et EM-1A	Topic #2
37	Hydro-Québec	2022	Indicateurs de performance SST Power BI	Topic #2
38	Hydro-Québec	2022	Rapport d'analyse et d'identification des risques SST pour les centrales EM	Topic #2
39	Hydro-Québec		Déclaration de principes en SST	Topic #2
40	Hydro-Québec	2021	ISO 45001 summary status (extract from Sustainability Report)	Topic #2
41	Hydro-Québec	2022	Sample contract for HS induction and inclusion of HQ HS policies	Topic #2

42	Hydro-Québec	2022	Accident analysis and corrective measures	Topic #2
43	Hydro-Québec	2022	Code de conduite des fournisseurs	Topic #2
44	Hydro-Québec	2022	Recent Hydro-Quebec H&S Communication Campaign	Topic #2 / <a href="https://www.dangersbienreels.ca/">https://www.dangersbienreels.ca/</a>
45	Hydro-Québec	2021	Example of collective agreements: Convention collective Technologues 957, convention collective Métier 1500	Topic #2
46	Hydro-Québec	2022	HQ-RH-N-2002 Milieu de travail sain et exempt de discrimination et de harcèlement	Topic #2
47	Hydro-Québec	2021	Examples of H&S Procedures: HQ-SST-M-1002 Élaborer et utiliser une fiche de cadenassage HQ-SST-N-001-Principes de cadenassage Norme Espace clos HQ SST-N-2001 P-SEC-N-019-02-Mesures de sécurité à appliquer lors de travaux sur ou à proximité d'un plan d'eau	Topic #2
48	Hydro-Québec	2015	Règle de gestion Mouvement de personnel et recrutement	Topic #2
49	Hydro-Québec	2022	Code d'éthique des employés	Topic #2
50	CORPORATE RIGHTS	2022	Hydro-Québec reconnue comme meilleure entreprise citoyenne au pays / First Rank Best 50 Corporate Citizens in Canada	Topic #2 / Corporate Knights
51	ECOVADIS	2021	ECOVADIS PLATINUM MEDAL In 2021	Topic #2
52	Hydro-Québec	2022	Example of solemn declaration of suppliers	Topic #2
53	Hydro-Québec	2021	Ethics Transparency and recognition (page 23 / Sustainability Report)	Topic #2 / <a href="http://www.hydroquebec.com/sustainable-development">www.hydroquebec.com/sustainable-development</a>
54	Hydro-Québec	2021	Portrait de l'effectif 2021	Topic #2
55	Hydro-Québec	2022	Rapport sur l'effectif d'Hydro-Québec	Topic #2
56	Schetagne et al	2006	Évolution de la qualité de l'eau. Rapport technique d'analyse des données de 1978 à 2000. HQ-2006-005	Topic #3
57	Hydro-Québec	2018	Politique Nos Ressources Humaines	Topic #2
58	Hydro-Québec		3 examples for accident reports from Enablon - Retour d'expérience (REX) Impact humain	Topic #2
59	Hydro-Québec		Statement of Occupational Health and Safety Principles	Topic #2
60	Demarty, M.	2010	Suivi de la qualité de l'eau	Topic #3
61	Demarty, M.	2011	Aménagement hydroélectrique de l'Eastmain-1 – Suivi environnemental en phase d'exploitation – Suivi de la qualité de l'eau 2011	Topic #3
62	Bilodeau, F.	2014	Suivi du carbone organique total (COT) dans l'estuaire de la baie de la rivière Rupert – Année 2013	Topic #3
63	Bilodeau, F.	2014	Présentation MC. Environmental Follow-up 2013. Total Organic Carbon (TOC)	Topic #3

64	Breton et al.	2019	Suivi de la qualité de l'eau des rivières Rupert et Nemiscau 2017	Topic #3
65	Bilodeau, F.	2018	Présentation MC. Environmental Follow-up 2017. Water Quality in the Rupert and Nemiscau Rivers	Topic #3
66	Hydro-Québec. Environnement ; Poly-Géo inc.	2016	Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi 2015 de la dynamique des rives de la rivière Rupert - HQ-2016-055	Topic #3 / <a href="https://www.cherloc.ca/Main.htm?lang=EN">https://www.cherloc.ca/Main.htm?lang=EN</a>
67	Hydro-Québec. Environnement; Poly-Géo inc.	2019	Complexe de l'Eastmain-Sarcelle-Rupert. Étude des rives au droit et en amont des huit ouvrages de la Rupert – 2018 - HQ-2019-083	Topic #3 / <a href="https://www.cherloc.ca/Main.htm?lang=EN">https://www.cherloc.ca/Main.htm?lang=EN</a>
68	SEBJ; Hydro-Québec Environnement; Environnement Illimité inc.	2012	Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi du cône sédimentaire à l'entrée du réservoir de l'Eastmain 1. Rapport d'étude - HQ-2012-138	Topic #3 / <a href="https://www.cherloc.ca/Main.htm?lang=EN">https://www.cherloc.ca/Main.htm?lang=EN</a>
69	Hydro-Québec Production. Environnement; AECOM Tecslut inc.	2010	Aménagement hydroélectrique de l'Eastmain-1. Suivi des berges dans le tronçon aval de la rivière Eastmain (PK 192-217). Rapport synthèse 2005-2009 - HQ-2010-151	Topic #3 / <a href="https://www.cherloc.ca/Main.htm?lang=EN">https://www.cherloc.ca/Main.htm?lang=EN</a>
70	Hydro-Québec	2015	Follow-up on Bank Dynamics upstream of Rupert River structures (2015) – Presented to the Monitoring Committee	Topic #3
71	Genivar	2003	Caractérisation de l'eau brute de la prise d'eau potable du village de Waskaganish – Centrale de l'Eastmain 1 – Dérivation Rupert	Topic #3
72	Hydro-Québec	2006	Suivi environnemental du Complexe La Grande Évolution de la qualité de l'eau. RAPPORT TECHNIQUE D'ANALYSE DES DONNÉES DE 1978 À 2000	Topic #3
73	Vincent Métivier, Bernard Massicotte, Alain Tremblay & Pierre Dupuis	2018	Monitoring saltwater intrusion in Rupert Bay, Québec, Canada, after the partial diversion of a major tributary	Topic #3 Environmental Monitoring and Assessment volume 190, Article number: 38 (2018)
74	CONSORTIUM WASKA-GENIVAR	2022	Complexe de l'Eastmain-Sarcelle-Rupert : Suivi de la sédimentologie : Relevés bathymétriques en amont du seuil du PK 223 de la rivière Rupert. Rapport d'étude - 2020 Version préfinale Avril 2022	Topic #3
75	Bilodeau et Plante	2022	Summary on Mercury and Public Health	Topic #4

76	Auteurs multiples		Le Guide Alimentaire des Poissons Nordiques Région de la Baie-James	Topic #4 / <a href="http://www.hydroquebec.com/developpementdurable/documentation/mercure.html">http://www.hydroquebec.com/developpementdurable/documentation/mercure.html</a>
77	SCHETAGNE, R., TERRIEN, J.,	2013	Évolution des teneurs en mercure dans les poissons – Rapport synthèse 1978-2012	Topic #4
78	TERRIEN, J., BILODEAU, F	2018	Suivi des teneurs en mercure dans la chair des poissons (2016)	Topic #4
79	Bilodeau et Plante	2018	Monitoring Update: 2016 Mercury Levels in Fish of the Eastmain and Rupert Diversion Region	Topic #4
80	François Bilodeau, Jean Therrien & Roger Schetagn	2017	Intensity and duration of effects of impoundment on mercury levels in fishes of hydroelectric reservoirs in northern Québec (Canada)	Topic #4 / <a href="https://doi.org/10.1080/20442041.2017.1401702">https://doi.org/10.1080/20442041.2017.1401702</a>
81	Hydro-Québec- CCSSBJ-Genivar	2013	Évaluation de l'efficacité des outils d'information sur le mercure et la consommation de poisson	Topic #4
82	Chevalier, Dumont, Penn	1997	MERCURY IN NORTHERN QUBEC ROLE OF THE MERCURY AGREEMENT AND STATUS OF RESEARCH AND MONITORING	Topic #4
83	François Bilodeau, Michel Plante et Alain Tremblay (Hydro- Québec)	2020	Gestion du mercure dans les réservoirs hydroélectriques	Topic #4
84	Hydro-Québec	2022	Clauses particulières Maîtrise de la végétation phytocide – 2022 Dignes et barrages Baie-James	Topic #4
85	Carine Durocher	2017	Following-up Cree Health Determinants in James Bay	Topic #4
86	François Bilodeau, Roger Schetagne, Jean Therrien, and Richard Verdon	2016	Absence of noticeable mercury effects on fish populations in boreal reservoirs despite threefold to sevenfold increases in mercury concentrations	Topic #4
87	Consortium Genivar Waska	2015	Follow-Up of Determinants of Cree Health – 2012	Topic #4
88	Niskamoon Corporation	2021	Niskamoon 2020-2021 Annual Report	Topic #4 / <a href="http://www.niskamoon.org/">http://www.niskamoon.org/</a>
89	Hydro-Québec	2012	Opinion Survey of the Cree Population	Topic #4

90	Hydro-Québec	2009	Manuel d'exploitation et entretien Eastmain 1 et Eastmain 1-A	Topic #4
91	SEBJ	2009	Rapport de synthèse Description et réalisation Centrale de l'Eastmain 1-A	Topic #4
92	SEBJ	2014	Rapport de synthèse Description et réalisation Aménagement de l'Eastmain 1	Topic #4
93	Hydro-Québec	2016	Directive Sécurité des personnes et des actifs	Topic #4
94	Hydro-Québec Production	2022	Eastmain-Sarcelle-Rupert Complex Follow-up of Economic Spinoffs 2012-2016	Topic #4
95	Hydro-Québec	2019	Programme de sécurité 2019-2023	Topic #4
96	Hydro-Québec	2022	Mesures d'urgence – Fonctions des membres des comités d'urgence	Topic #4
97	Hydro-Québec	2022	Mesures d'urgence – Liste de vérification - formulaires	Topic #4
98	Hydro-Québec	2022	Mesures d'urgence – Niveaux d'alerte et de mobilisation Hydro-Québec Production	Topic #4
99	Hydro-Québec	2020	Mesures d'urgence – Plan d'urgence corporatif	Topic #4
100	Hydro-Québec	2022	Mesures d'urgence – Exemples de procédures d'intervention spécifique	Topic #4
101	Hydro-Québec	2022	Mesures d'urgence – Schémas de communication Hydro-Québec Production	Topic #4
102	Hydro-Québec	2022	Cartes inventaires des routes et ponts Secteur Rupert, Eastmain 1, Eastmain 1A	Topic #4
103	Hydro-Québec	2022	Cartes inondation Secteur Rupert, Eastmain 1, Eastmain 1A	Topic #4
104	SEBJ	2003	Étude de rupture du barrage principal - Aménagement hydroélectrique de l'Eastmain-1	Topic #4
105	SEBJ	2003	Niveau de conséquences en cas de rupture Barrage principal et digues LE-3 à LE-9 - Aménagement hydroélectrique de l'Eastmain-1	Topic #4
106	SEBJ	2003	Niveau de conséquences en cas de rupture Barrage principal et Digues secteur sud LE-23 à LE-26F- Aménagement hydroélectrique de l'Eastmain-1	Topic #4
107	SEBJ	2003	Niveau de conséquences en cas de rupture Barrage principal et Digues secteur ouest LE-14 à LE-22 - Aménagement hydroélectrique de l'Eastmain-1	Topic #4
108	SEBJ	2003	Niveau de conséquences en cas de rupture Barrage principal et Digues secteur nord LE-10 à LE-13A - Aménagement hydroélectrique de l'Eastmain-1	Topic #4
109	Gazette officielle du Québec / Gouvernement du Québec	2021	Loi et Règlement sur la sécurité des barrages	Topic #4
110	SEBJ	2006	Niveau de conséquences en cas de rupture (Aménagement de la dérivation Rupert) Barrage et évacuateur de la Rupert et digue LR-57	Topic #4
111	SEBJ	2007	Étude de rupture et détermination du niveau de conséquences en cas de rupture (Aménagement de la dérivation Rupert) Bief amont- Ouvrages et structures, Secteur Nord- Barrage et ouvrage de restitution Lemare, digues LR-29 à LR-42, canal d'amenée et seuil en béton au tunnel de transfert	Topic #4
112	SEBJ	2009	Étude de rupture et niveau de conséquences en cas de rupture (Aménagement de la dérivation Rupert) Seuil du PK 170	Topic #4



113	Hydro-Québec	2004	Aspects sismiques Eastmain 1 - Rupert	Topic #4
114	Hydro-Québec	2019	Programme de sécurité des barrages 2019-2023	Topic #4
115	Hydro-Québec	2021	Directive – Mode d’exploitation évacuateur de l’Eastmain	Topic #4
116	Hydro-Québec	2021	Directive – Mode d’exploitation évacuateur de crues de la Rupert	Topic #4
117	Hydro-Québec	2021	Aménagements de l’Eastmain-1 et de la dérivation Rupert	Topic #4
118	Hydro-Québec	2022	Barrages et évacuateurs – Chronologie des inspections et suivi des relevés d’instrumentation et des relevés topographiques 2021-2022	Topic #4
119	Hydro-Québec	2021	Programme essais de levage vannes et poutrelles	Topic #4
120	SEBJ	2007	Letter to Mr. Neeposh : Eastmain-I-A and Sarcelle powerhouses and Rupert diversion agreement concerning mitigation measures planned for trapline M25	Topic #4
121	Administration régionale Baie-James (ARBJ)	2022	BILAN ANNUEL 2021-2022 FONDS EASTMAIN	Topic #4
122	New York Times	2022	A Fight Over America’s Energy Future Erupts on the Canadian Border	Topic #4
123	Statistics Canada	2022	Census Profiles 2021	Topic #4 <a href="https://www.statcan.gc.ca/en/start">https://www.statcan.gc.ca/en/start</a>
124	Hydro-Québec	2021	Comparison of Electricity Prices in Major North American Cities Rates in effect April 1, 2021	Topic #4
125	Prism	2015	HYDROPOWER AND THE CANADIAN ECONOMY: JOBS AND INVESTMENT IN CANADA’S LARGEST ELECTRICITY SOURCE	Topic #4
126	Hydro-Québec, Niskamoon Corporation	2013	Example for claim resolution – loss of boat and motor	Topic #4
127	Niskamoon Corporation	2018	Presenters: Robbie Tapiatic & Marc Dunn : Working Together to Guarantee the next Generation of Cree Land Users. November 14-15, 2018	Topic #4
128	Le Devoir	2005	Projet Eastmain – Les citoyens blancs de la Baie-James se partageront 310 millions	Topic #4
129	Hydro-Québec	2021	SOCIAL RESPONSIBILITY DIRECTIVE	Topic #4
130	CBC News	2017	Stories from the trenches: Adapting a Cree way of life in the wake of a mega-project	Topic #4
131	Hydro-Québec		Summary of Mitigation and Enhancement Measures for 6 Communities	Topic #4
132	Commission de la construction du Québec (CCQ)		THE JAMES BAY CREES AND THE CONSTRUCTION INDUSTRY	Topic #4
133	Hydro-Québec Production. Environnement; WSP	2018	Complexe de l’Eastmain-Sarcelle-Rupert. Suivi des communautés de poissons et de la dynamique des populations dans la Rupert. Rapport d’étude 2016. - HQ-2018-110	Topic #6 / <a href="https://www.cherloc.ca/Main.htm?lang=EN">https://www.cherloc.ca/Main.htm?lang=EN</a>

	Canada; Laneuvill e, Pierre (HQ); Dion, René (HQ); Massicotte, Bernard			
134	Environnement Illimité; SEBJ; Hydro-Québec Équipement et services partagés	2012	Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Synthèse des connaissances acquises sur l'esturgeon jaune = Eastmain-1-A and Sarcelle powerhouses and Rupert diversion. Summary of knowledge acquired on lake sturgeon - HQ-2012-189	Topic #6 / <a href="https://www.cherloc.ca/Main.htm?lang=EN">https://www.cherloc.ca/Main.htm?lang=EN</a>
135	Hydro-Québec. Environnement; Kaweshekami Environnement inc.	2019	Complexe de l'Eastmain-Sarcelle-Rupert. Suivi des juvéniles d'esturgeon et d'autres espèces cibles au PK 205 et 230 de la rivière Rupert. Suivi 2018 - HQ-2019-086	Topic #6 / <a href="https://www.cherloc.ca/Main.htm?lang=EN">https://www.cherloc.ca/Main.htm?lang=EN</a>
136	Waska Ressources; Hydro-Québec Production. Environnement; WSP Canada	2017	Complexe de l'Eastmain-Sarcelle-Rupert. Suivi environnemental du cisco anadrome. Rapport d'études 2014-2015 et bilan du suivi (2008-2015) - HQ-2017-023	Topic #6 / <a href="https://www.cherloc.ca/Main.htm?lang=EN">https://www.cherloc.ca/Main.htm?lang=EN</a>
137	Canadian Science Advisory Secretariat	2005	A Comprehensive Framework for Assessing Changes in Fish Habitat Productive Capacity Resulting From Large Hydroelectric Projects	Topic #6
138	Hydro-Québec	2016	BIODIVERSITY PERFORMANCE HIGHLIGHTS	Topic #6
139	CREE NATION GOVERNMENT	2015	CREE REGIONAL CONSERVATION STRATEGY	Topic #6
140	Hydro-Québec	2016	BIODIVERSITY PERFORMANCE REPORT 2015	Topic #6
141	Hydro-Québec	2016	CORPORATE STRATEGY ON BIODIVERSITY   2015–2020	Topic #6
142	Carine Durocher, René Dion	2017	CREE KNOWLEDGE AND CISCO IN THE RUPERT RIVER. Presentation at IAIA 2017	Topic #6
143	Julie D'Amours, René Dion	2018	Juvenile lake sturgeon monitoring and determinants of year- class strength in the Rupert River, mid-northern Québec, Canada	Topic #6 J Appl Ichthyol. 2019;35:344–354.
144	Katrine Turgeon, Christian Turpin	2019	Dams have varying impacts on fish communities across latitudes: A quantitative synthesis	Topic #6 Ecology Letters, Volume 22, Issue 9 September 2019

	and Irene Gregory-Eaves			
145	Hydro-Québec	2017	Hydro-Québec et les communautés autochtones – plus de 40 ans de partenariat	Topic #7 / <a href="https://www.hydroquebec.com/data/a-propos/pdf/partenariat-communautes-autochtones-2017g422f.pdf">https://www.hydroquebec.com/data/a-propos/pdf/partenariat-communautes-autochtones-2017g422f.pdf</a>
146	Sofiane Baba (Université de Sherbrooke), Réal Courcelles (Senior Advisor – Indigenous Relations, Hydro-Québec) and Marc Dunn (Environment Director, Niskamoon)	2021	Building Partnerships with First Nations for Major Hydroelectric Projects: The Eastmain-1-A/Sarcelle/Rupert project in the Baie-James Region	Topic #7
147	Hydro-Québec	2016	Building indigenous community partnerships in Canada	Topic #7 / <a href="https://www.hydropower.org/resources/case-studies/building-community-partnerships-with-indigenous-communities-in-quebec">https://www.hydropower.org/resources/case-studies/building-community-partnerships-with-indigenous-communities-in-quebec</a>
148	Genivar	2020	Eastmain-Sarcelle-Rupert Complex Follow-up of Cree Land Use – 2015-2016 Operation Phase	Topic #7
149	Niskamoon, Hydro-Québec	2021	Entente de Ré-appropriation du territoire Suivi Annexe 4.1	Topic #7
150	Sofiane Baba, Emmanuel Raufflet, John Paul Murdoch and Réal Courcelles	2016	Rebuilding Relations: Hydro-Québec and the Cree Nation (1994–2015)	Topic #7 / <a href="https://www.hydroquebec.com/data/a-propos/pdf/rebuilding-relations-hq-and-cree-nation-1994-2015.pdf">https://www.hydroquebec.com/data/a-propos/pdf/rebuilding-relations-hq-and-cree-nation-1994-2015.pdf</a>
151	Niskamoon Corporation	2022	Niskamoon Board Meeting Minutes	Topic #7 / <a href="http://www.niskamoon.org/committees/">http://www.niskamoon.org/committees/</a>

152	Hydro-Québec/SEBJ and the Crees of Eeyou Istchee	2004	Agreement concerning a new relationship between Hydro-Québec/SEBJ and the Crees of Eeyou Istchee	Topic #7
153	SEBJ	2007	Example of Agreement - Eastmain-I-A and Sarcelle powerhouses and Rupert diversion Agreement concerning mitigation measures planned for trapline M25	Topic #7
154	Hydro-Québec	2002	Agreements between Hydro-Québec, the Société d'énergie de la Baie James and the Crees of Québec - Summaries	Topic #7
155	Hydro-Québec		Hydro-Québec's Declaration of Commitment to the First Nations and the Inuit Nation	Topic #7
156	Grand Council of the Crees/ Cree Nation Government	2020	Key milestones in the history of the Eeyou of Eeyou Istchee	Topic #7
157	Thierry Rodon	2014	From Nouveau-Québec to Nunavik and Eeyou Istchee: The Political Economy of Northern Quebec	Topic #7 The Northern Review 38 (2014): 93–112
158	Hydro-Québec	2021	Baseline PAR (Progressive Aboriginal Relations) Certification	Topic #7
159	Grand Council of the Crees/ Cree Nation Government		2020/2021 Annual Report	Topic #7
160	Miriam Atkinson and Monica E. Mulrennan	2009	Local Protest and Resistance to the Rupert Diversion Project, Northern Quebec	Topic #7 ARCTIC VOL. 62, NO. 4 (DECEMBER 2009) P. 468 – 480
161	SNC Lavalin	2014	LITERATURE REVIEW - IDENTIFICATION OF THE ENVIRONMENTAL AND SOCIAL CONCERNS OF THE CREE	Topic #7
162	Eduardo Schiehl, Emmanuel Raufflet	2013	Hydro-Québec and the Crees: the challenges of being accountable to First Nations - case and teaching notes	Topic #7 International Journal of Teaching and Case Studies · January 2013
163	Carine Durocher		Monitoring the human impacts of a hydroelectric project in Baie-James in cooperation with the Cree communities	Topic #7
164	SEBJ	2012	2007-2012 Report on Tangible Measures Put in Place to Enhance the Archaeological Finds Discovered During the Project	Topic #8
165	Cree Regional Authority	2008	A History of the Families of the Eastmain-1 Area	Topic #8

166	Martin Perron	2022	Synthèse des études et des interventions archéologiques réalisées pour le projet D'Aménagement hydroélectrique de l'Eastmain-1 – Dérivation de la rivière Rupert	Topic #8
167	David Denton and Dario Izaguirre, Aanischaau-kamikw Cree Cultural Institute	2019	Monitoring of archaeological and burial sites: Eastmain-1 Reservoir	Topic #8
168	David Denton and Dario Izaguirre	2018	Community Archaeology and Hydroelectric Projects in the 2000s in Eeyou Istchee James Bay	Topic #8 / <a href="https://www.erudit.org/fr/revues/raq/2018-v48-n3-raq04765/1062134ar/">https://www.erudit.org/fr/revues/raq/2018-v48-n3-raq04765/1062134ar/</a>
169	Denton, D. & Izaguirre, D.	2018	Avant les inondations : Archéologie communautaire et projets hydroélectriques des années 2000 à Eeyou Istchee Baie-James	Recherches amérindiennes au Québec, 48(3), 57–80. <a href="https://doi.org/10.7202/1062134ar">https://doi.org/10.7202/1062134ar</a>
170	David Denton, Kreg Ettenger and Donovan Moses	2003	The Nadoshtin Archaeology and Cultural Heritage Program	Eeyou Eenou – The Voice of the People
171	Denton		“Have you dug up my grandfather yet?” Thoughts on archaeological research in Eeyou Istchee in relation to community concerns and ethics	Topic #8
172	CBC	2019	'Like losing a loved one': Quebec dam renaming painful for some Cree	Topic #8
173	Hydro-Québec	2019	Press Release: The hydroelectric facilities in the Eastmain- Sarcelle-Rupert complex have been renamed in memory of Bernard Landry	Topic #8
174	Bureau Normalisation du Québec	2022	Sommaire Rapport audit externe ISO 14001	Topic #9
175	Hydro-Québec	2022	Programme d'audit interne ISO 14001	Topic #9
176	Hydro-Québec	2021	Politique Notre Gestion	Topic #9
177	Hydro-Québec	2013	Directive Acceptabilité des projets et des activités de l'entreprise	Topic #9
178	Hydro-Québec	2921	Directive Acquisition de biens meubles, de services et de gestion de contrats	Topic #9
179	Hydro-Québec	2013	Directive Conduite des relations avec les collectivités	Topic #9
180	Hydro-Québec	2022	Mandat du vérificateur interne d'Hydro-Québec	Topic #9
181	Gazette officielle du Québec /	2022	Loi sur la gouvernance des sociétés d'État	Topic #9

	Gouvernement du Québec			
182	Hydro-Québec	2013	Règles de gouvernance d'Hydro-Québec	Topic #9
183	Hydro-Québec	2018	Politique Notre Environnement	Topic #9
184	Hydro-Québec	2018	Politique Notre rôle Social	Topic #9
185	Bureau de normalisation du Québec	2022	Certificat d'enregistrement à la norme ISO 14001	Topic #9
186	Bureau de normalisation du Québec	2022	Certificat d'enregistrement à la norme ISO 37001	Topic #9
187	Hydro-Québec	2019	Politique Nos relations avec les autochtones	Topic #9
188	Hydro-Québec	2018	Procédure de traitement des allégations concernant des actes répréhensibles ou situations inappropriées	Topic #9
189	Sofiane Baba, Emmanuel Raufflet, John Paul Murdoch and Réal Courcelles	2016	Rebuilding Relations: Hydro-Québec and the Cree Nation (1994–2015)	Topic #9
190	Hydro-Québec	2022	Governance Structure	Topic #9 / <a href="https://www.hydroquebec.com/about/governance/board-directors.html">https://www.hydroquebec.com/about/governance/board-directors.html</a>
191	Hydro-Québec	2022	Sommaire Portefeuille risques affaires Hydro-Québec	Topic #9
192	Hydro-Québec	2021	Guide d'identification des événements indésirables	Topic #9
193	SDBJ	2018	Cahier de charge d'entretien d'hiver et d'été des installations permanentes d'Hydro-Québec du secteur des centrales de l'Eastmain 1, 1A et de La Sarcelle ainsi que du réseau routier associé	Topic #9
194	Hydro-Québec	2017	Clauses particulières contrôle parasitaire Baie-James et Ouest	Topic #9
195	Hydro-Québec	2021	Clauses environnementales à intégrer aux contrats et aux commandes – Installations Baie-James	Topic #9
196	Monitoring Committee	2021	Agreement concerning the Re-appropriation of Territory Affected by the Eastmain 1-A/Sarcelle/Rupert Project	Topic #10
197	Québec		HYDRO-QUÉBEC ACT	Topic #9 Updated to December 31, 2019

198	Hydro-Québec		Notre engagement dans la lutte contre la corruption	Topic #9
199	Hydro-Québec	2022	Organization chart Direction générale	Topic #9
200	Hydro-Québec	2018	Nos acquisitions de biens meubles et de services et les conditions des contrats	Topic #9
201	Hydro-Québec	2021	Notre gestion	Topic #9
202	Hydro-Québec	2022	Directive Gestion des risques	Topic #9
203	Hydro-Québec	2013	Règles de gouvernance d'Hydro-Québec	Topic #9
204	Hydro-Québec	2022	Programme d'audits multi-domaines : Audit du système de gestion en environnement ISO 14001 : 2015 d'Hydro- Québec	Topic #9
205	Hydro Review	2022	Hydro-Quebec, Innergex, Brookfield make top three spots on Canadian corporate citizens list	Topic #9
206	Hydro-Québec	2016	Hydro & Friends Online	Topic #10 / <a href="http://www.hydroquebec.com/hydroandfriends/">http://www.hydroquebec.com/hydroandfriends/</a>
207	Hydro-Québec	2022	Annual Report 2021	Topic #10
208	Hydro-Québec	2022	Schéma communication situation d'urgence parties prenantes externe	Topic #10
209	Hydro-Québec	2022	Programme de mise en valeur intégrée et exemples de fiches d'initiatives	Topic #10 / <a href="https://www.hydroquebec.com/projets/pmvi/">https://www.hydroquebec.com/projets/pmvi/</a>
210	Hydro-Québec	2022	Programme dons et commandites	Topic #10 / <a href="https://www.hydroquebec.com/dons-commandites/#:~:text=Dons%20et%20commandites%20%E2%88%92%20Maximiser%20,ann%C3%A9e%20au%20gouvernement%20du%20Qu%C3%A9bec">https://www.hydroquebec.com/dons-commandites/#:~:text=Dons%20et%20commandites%20%E2%88%92%20Maximiser%20,ann%C3%A9e%20au%20gouvernement%20du%20Qu%C3%A9bec</a>
211	Hydro-Québec	2020	Sondage de satisfaction auprès de partenaires municipaux	Topic #10
212	Hydro-Québec	2020	Bulletin de sécurité routière pour les partenaires	Topic #10
213	Hydro-Québec	2021	Cartographie des parties prenantes 2021 pour les relations avec les communautés	Topic #10
214	Administration Régionale Baie-James	2022	Bilan annuel 2021-2022 Fonds Eastmain	Topic #10 / <a href="https://arbj.ca/wp-content/uploads/2021/11/Rapport-annuel-2020-2021-ARBJ.pdf">https://arbj.ca/wp-content/uploads/2021/11/Rapport-annuel-2020-2021-ARBJ.pdf</a>
215	Hydro-Québec	2022	Exemples d'Infolettre aux collectivités	Topic #10 / <a href="https://www.hydroquebec.com/sefco2016/fr/abonnement-bulletin-collectivites.html">https://www.hydroquebec.com/sefco2016/fr/abonnement-bulletin-collectivites.html</a>
216	Hydro-Québec	2022	Annuaire urgence La Grande et Aide-mémoire urgence municipalités	Topic #10

217	Hydro-Québec	2022	HQ Info, nos actualités, dans nos médias sociaux, à surveiller (exemple September 14)	Topic #10
218	Monitoring Committee	2021	Signed Minutes_Monitoring Committee Meeting no 124 June 11 2021	Topic #10
219	Monitoring Committee	2021	Signed Minutes_Monitoring Committee Meeting no 123 April 7 & 15 2021	Topic #10
220	Monitoring Committee	2020	Joint Rupert River Water Management Board (no 40) – Monitoring Committee Meeting signed Minutes 2020_06_18	Topic #10
221	Hydro-Québec	2022	Info de notre équipe Exploitation et Expérience Client – 2022 – Opération de clamage d’urgence réalisé dans les règles de l’art grâce à un sous-marin - Eastmain	Topic #10
222	Nemaska Band Council	2017	Meeting minutes - Corrective measures at KP 170 Weir Mitigation measures	Topic #10
223	Steering Committee	2022	COASTAL HABITAT RESEARCH PROGRAM STEERING COMMITTEE MINUTES OF MEETING NO.46	Topic #10
224	Hydro-Québec	2015	Communication Plan – Rupert River Water Release Infrastructure	Topic #10
225	Coastal Habitat Comprehensive Research Program	2020	Coastal Habitat Comprehensive Research Program Newsletter	Topic #10
226	Hydro-Québec	2022	No fly zone Map	Topic #10
227	SOM	2020	Sondage sur la satisfaction des partenaires des communautés autochtones	Topic #10
228	CBC	2007	Eastmain hydroelectric plant a go	Topic #10
229	Hydro-Québec	2007	Press Release : Eastmain-1-A-Sarcelle-Rupert hydropower project: Hydro-Québec denounces falsehoods circulated by certain groups	Topic #10
230	SaveTheRupert.org	2007	Press Release : New James Bay Dams to Destroy Pristine Quebec River	Topic #10
231	Coastal Habitat Research Program	2020	Eelgrass Newsletter Spring 2020	Topic #10
232	Canadian Business	2022	Hydro-Québec’s Billion-Dollar Power Struggle	Topic #10
233	James Bay Advisory Committee on the Environment	2019	BEST-PRACTICE GUIDANCE FOR PROJECT PROPONENTS : PROJECT-RELATED PUBLIC PARTICIPATION AND ENGAGEMENT IN THE JAMES BAY TERRITORY	Topic #10
234	Hydro-Québec		Travailler de concert avec vous : Numéros de téléphone utiles pour partenaires du monde municipal et régional	Topic #10



235	GINO BOIVIN	2021	BILAN DES ACTIONS sécurité routière 2020	Topic #10
236	Hydro-Québec Équipe RAM	2022	Présentation Tournée Municipalités : Hydro-Québec et les municipalités, des collaborations gagnantes	Topic #10
237	Hydro-Québec		AIDE-MÉMOIRE POUR LES MUNICIPALITÉS COMMUNIQUER AVEC HYDRO-QUÉBEC DANS LES SITUATIONS D'URGENCE	Topic #10
238	Hydro-Québec Direction régionale La Grande Rivière	2020	Annuaire d'urgence	Topic #10
239	Hydro-Québec Équipe RAM		Espace RAM screenshots; Notre équipe Abitibi-Témiscamingue, Nord-du-Québec et Saguenay-Lac-Saint-Jean	Topic #10
240	Hydro-Québec		Flyer - QUAND COMMUNIQUER AVEC RELATIONS AVEC LE MILIEU?	Topic #10
241	Hydro-Québec	2002	Figure 1 : Lignes d'eau estimées dans le tronçon de la rivière Eastmain compris entre les PK 216 et 203 – Avant la création du réservoir Eastmain 1	Topic #11
242	Hydro-Québec	2002	Carte 1 : Localisation des seuils naturels et sections bathymétriques de 2002	Topic #11
243	Hydro-Québec Production	2022	Hydrogrammes de débits au site du barrage Rupert	Topic #11
244	Hydro-Québec	2015	La Grande Profil Général Système	Topic #11
245	Hydro-Québec	2021	Présentation au Rupert River Management Board – Management of Rupert Diversion	Topic #11
246	Hydro-Québec	2018	AJUSTEMENT DE LA PRÉVISION ÉNERGÉTIQUE ET PROJECTIONS CLIMATIQUES 2035	Topic #11
247	Hydro-Québec	2018	2018 Runoff volume evolution on La Grande	Topic #11
248	Hydro-Québec	2018	Présentation au Rupert River Management Board – Reservoir Management	Topic #11
249	Hydro-Québec	2021	Prévision des apports – présentation Hydro-Québec	Topic #11
250	Hydro-Québec	2020	ScorEAU: Système d'évaluation de la performance des prévisions hydrométéorologiques	Topic #11
251	Hydro-Québec	2005	Vue d'ensemble du projet Centrale de l'Eastmain 1-A et Dérivation Rupert	Topic #11
252	Hydro-Québec	2022	La Grande Rivière - Planification de la production et gestion hydrique	Topic #11
253	Hydro-Québec	2016	Dérivation Rupert suivi des niveaux	Topic #11
254	Hydro-Québec	2016	Suivi hydrologique - Dérivation Rupert-Barrage aval au pk314	Topic #11
255	Hydro-Québec	2022	Operational Information on the Complexe La Grande (1975)	Topic #11
256	Hydro-Québec	2022	Hydrogrammes de débits au site du barrage Rupert	Topic #11
257	Hydro-Québec	2022	Contraintes d'exploitation SCADA	Topic #11
258	Hydro-Québec	2019	Directive d'exploitation - Particularités et contraintes d'exploitation Centrale de l'Eastmain-1	Topic #11
259	Hydro-Québec	2019	Directive d'exploitation - Particularités et contraintes d'exploitation Centrale de l'Eastmain-1-A	Topic #11
260	Hydro-Québec	2020	Renseignement d'exploitation - Tables des débits turbinés Centrale de l'Eastmain-1	Topic #11
261	Hydro-Québec	2020	Renseignement d'exploitation - Tables des débits turbinés Centrale de l'Eastmain-1-A	Topic #11

262	Hydro-Québec	2021	Directive d'exploitation - Mode d'exploitation de l'évacuateur de crues Centrales de l'Eastmain-1 et de l'Eastmain-1 -A	Topic #11
263	Hydro-Québec	2018	Renseignement d'exploitation Table des débits - Évacuateur de crues Centrales de l'Eastmain-1 et de l'Eastmain-1 -A	Topic #11
264	Hydro-Québec	2017	Directive d'exploitation – Gestion des engagements de débits réservés	Topic #11
265	Hydro-Québec	2014	Directive d'exploitation – Conduite de la production et exploitation des réservoirs	Topic #11
266	Hydro-Québec	2019	Rapport des déversements à l'évacuateur de crues de l'Eastmain-1 pour les années 2016 à 2018	Topic #11
267	Genivar	2015	Stations limnimétriques et météorologiques du projet – Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert	Topic #11
268	Hydro-Québec	2022	Présentation : Prévision et Qualité des données hydroélectrique Équipe QDH – Mode de fonctionnement	Topic #11
269	Geneviève Gagnon (Hydro-Québec)	2022	La Grande Rivière - Planification de la production et gestion hydrique	Topic #11
270	Hydro-Québec		Tailbay profile Rupert diversion tunnel	Topic #11
271	Hydro-Québec	2010	Eastmain-1-A/Sarcelle/Rupert Hydroelectric Development INFORMATION BULLETIN Number 1 : Rupert River Ecological Instream Flow Regime	Topic #11
272	Hydro-Québec	2012	Eastmain – Map of Ice Cover Conditions – Flyover Date 03-21-2012	Topic #11
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285	C Irambona, B Music, DF Nadeau, TF Mahdi	2016	Impacts of boreal hydroelectric reservoirs on seasonal climate and precipitation recycling as simulated by the CRCM5: a casestudy of the La Grande River watershed, Canada	Topic #12 / <a href="https://doi.org/10.1007/s00704-016-2010-8">https://doi.org/10.1007/s00704-016-2010-8</a>
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312	Ouranos	2015	VERS L'ADAPTATION : Synthèse des connaissances sur les changements climatiques au Québec	Topic #12
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## Appendix 3 - Photographs



Photo 1: Eastmain-1 intake



Photo 2: Eastmain-1 tailrace



Photo 3: Eastmain-1a intake with floating logs



Photo 4: Tailrace of Eastmain-1a



Photo 5: Eastmain-1a powerhouse interior



Photo 6: Partially revegetated work areas next to Eastmain-1a, view towards Eastmain River





Photo 7: Waste separation room



Photo 8: Equipment with personal safety lock

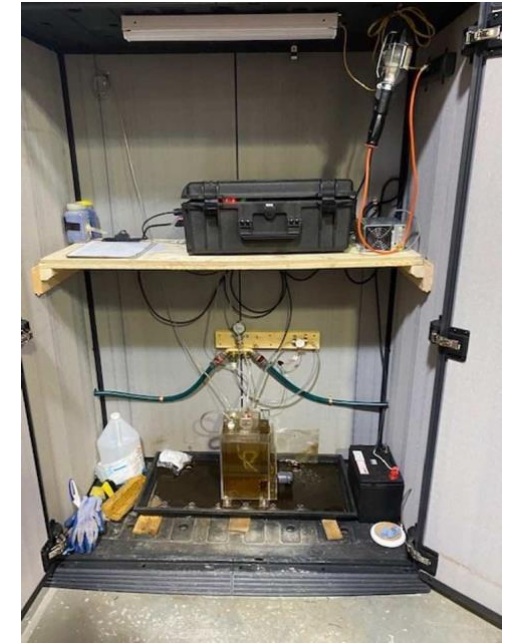


Photo 9: GHG emissions monitoring equipment

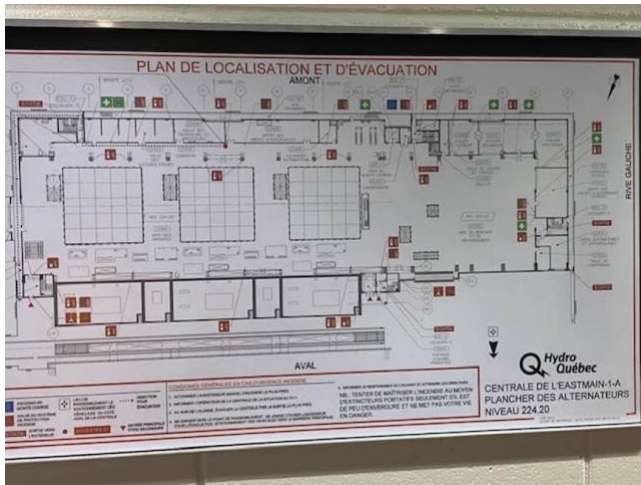


Photo 10: Evacuation chart Eastmain-1a

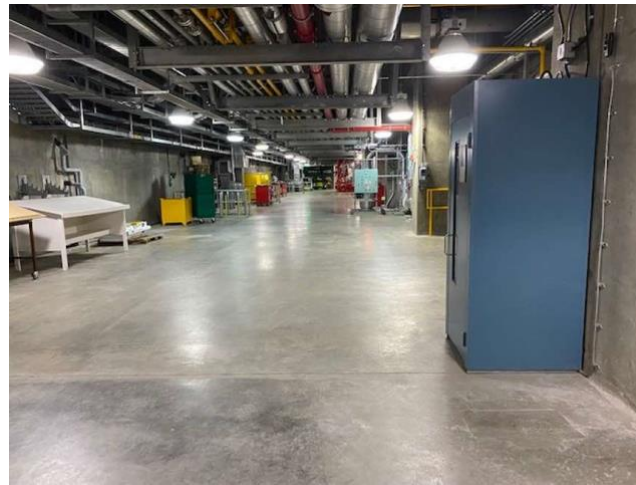


Photo 11: Exceptional housekeeping

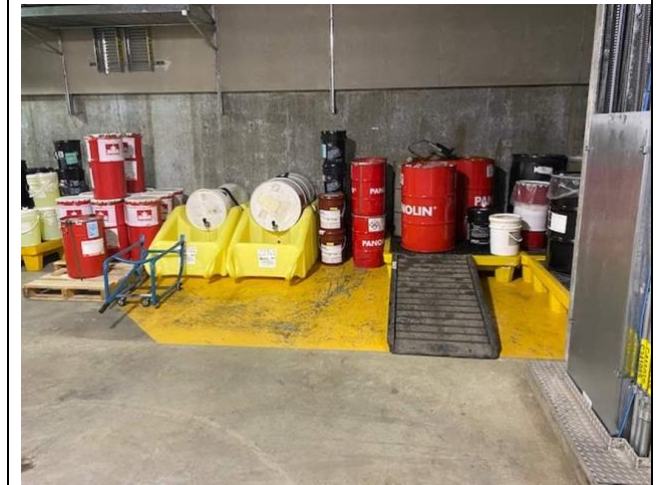


Photo 12: Hazardous waste storage





Photo 13: Road to Eastmain camp with speed monitoring



Photo 14: Camp entrance



Photo 15: Sign for outdoor trails



Photo 16: Camp layout



Photo 17: Visitor centre



Photo 18: Camp with rehabilitated part on right





Photo 19: Accommodation blocks



Photo 20: Elevated office entrances for snow conditions



Photo 21: Bearproof trash containers



Photo 22: Helicopter fuel station



Photo 23: Hydro-Québec vehicles with safety features



Photo 24: Ice hockey rink





Photo 25: Boats to borrow from staff association



Photo 26: Insulated freshwater tanks



Photo 27: Recreation equipment



Photo 28: Central park



Photo 29: Environment office



Photo 30: Forest fire risks



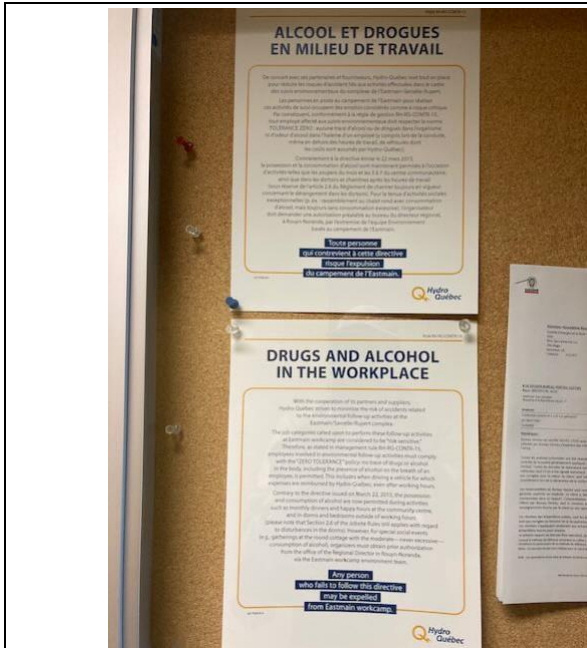


Photo 31: Drugs and alcohol policy in camp cafeteria

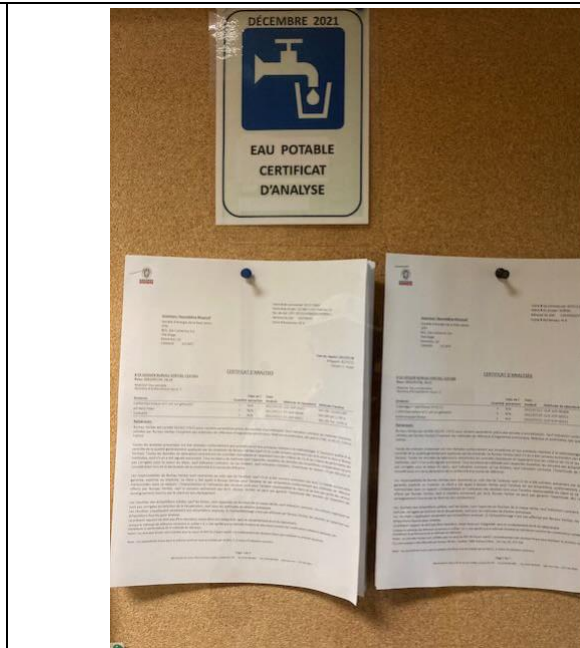


Photo 32: Water quality lab results in camp cafeteria

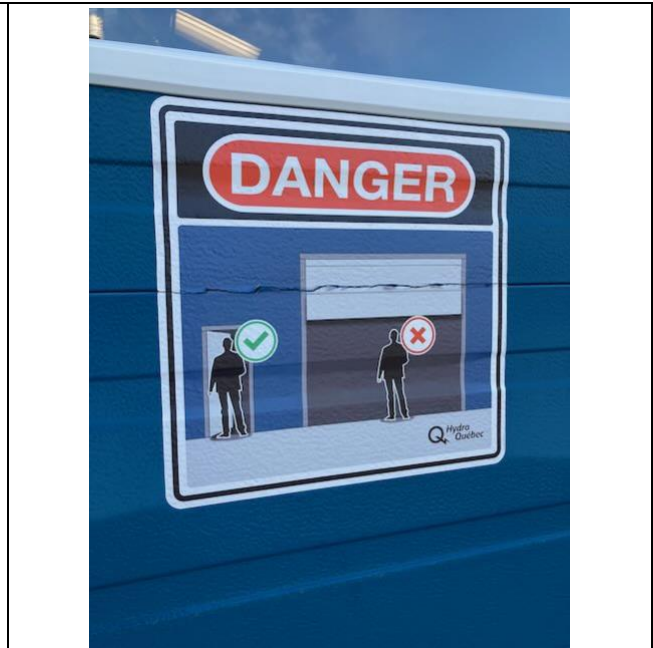


Photo 33: Safety signage



Photo 34: Signage on Hydro-Québec roads



Photo 35: Hydro-Québec flight to Rouyn and Nemiscau



Photo 36: Fish passage and sturgeon tracking site on Eastmain River





Photo 37: Safety barriers around gas tanks



Photo 38: Poster of fish species in environment office

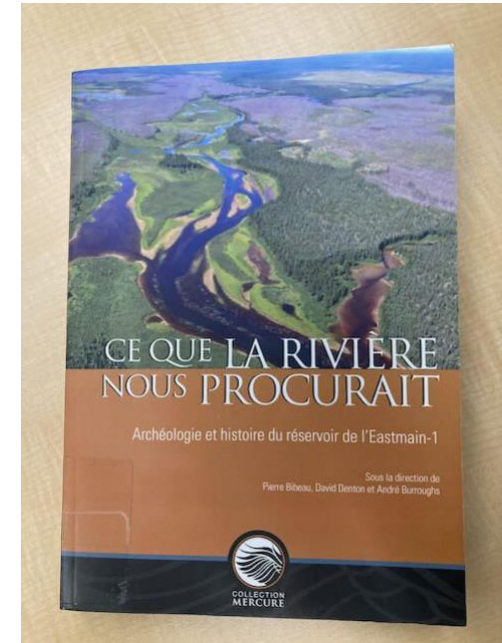


Photo 39: Archaeology and history of the Eastmain reservoir publication



Photo 40: Eastmain reservoir, dam and downstream river



Photo 41: Entrance controls at Eastmain dam



Photo 42: Eastmain dam





Photo 43: Visitor area with Eastmain dam in background



Photo 44: Debris and warning signs in front of Eastmain spillway



Photo 45: Warning sign for floating debris and submerged trees in disrepair

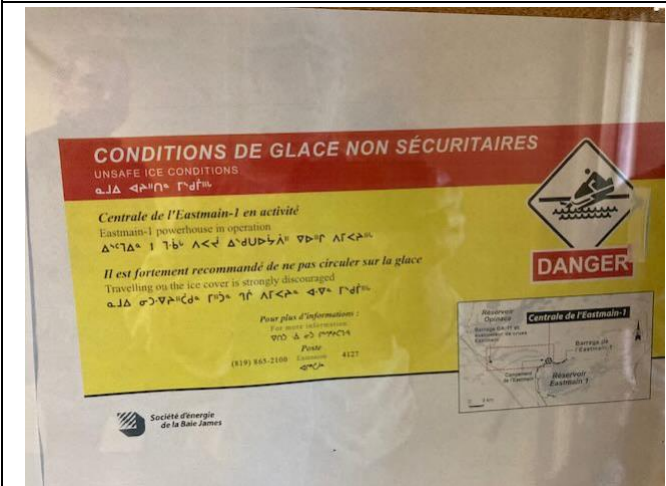


Photo 46: Warning sign for safety on ice



Photo 47: Restricted access to embankment dam



Photo 48: Eastmain reservoir from overlook





Photo 49: Eastmain spillway

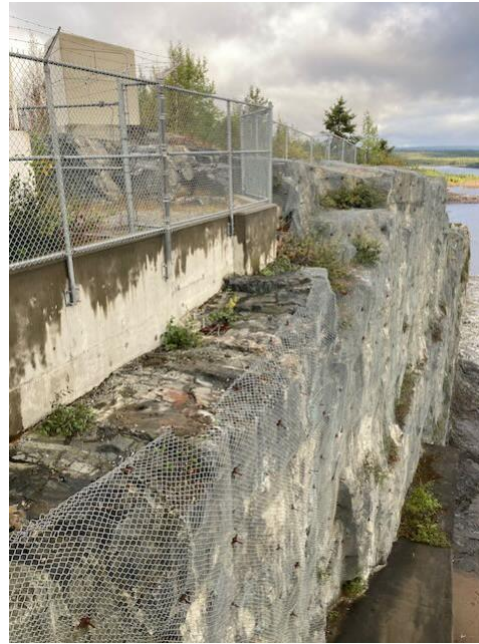


Photo 50: Slope protection at Eastmain dam

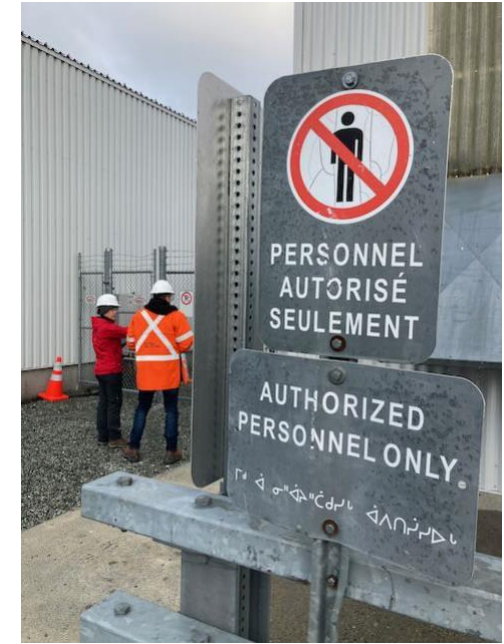


Photo 51: Warning signs at Eastmain dam in three languages



Photo 52: Downstream view from Eastmain dam



Photo 53: Eastmain dam spillway gates



Photo 54: Seepage monitoring below Eastmain dam





Photo 55: Cree monument at reservoir overlook



Photo 56: Raptor nesting platform

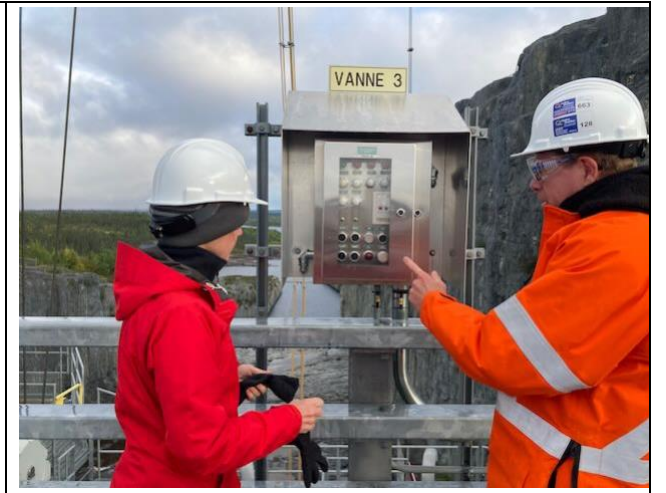


Photo 57: Spillway gate controls



Photo 58: Western edge of Eastmain reservoir



Photo 59: Eastmain River flowing into reservoir



Photo 60: Eastmain reservoir



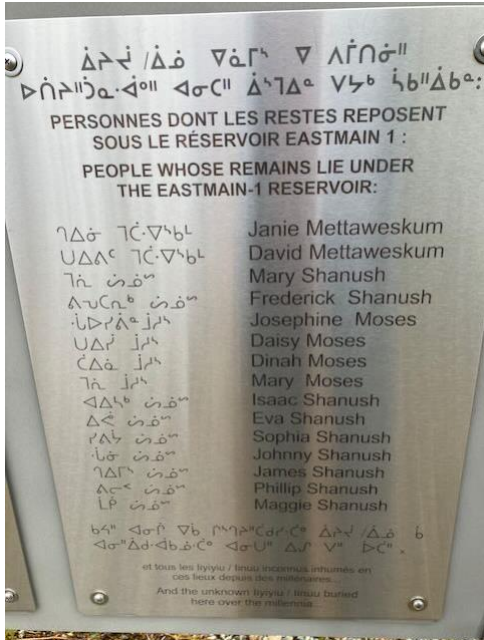


Photo 61: Plaque to commemorate burial sites inundated under reservoir



Photo 62: Transmission corridor and road to Eastmain



Photo 63: Boreal forest vegetation



Photo 64: Transmission corridor



Photo 65: Undisturbed landscape



Photo 66: Unregulated Pontax River





Photo 67: Rupert diversion dam and forebay



Photo 68: Rupert forebay



Photo 69: Boat access on Rupert forebay



Photo 70: Signage to honor Neeposh family



Photo 71: Signage to honor Neeposh family 2



Photo 72: Transmission lines crossing Rupert tailbay





Photo 73: Access road to Rupert forebay near Tommy Neeposh Tunnel



Photo 74: Tommy Neeposh Tunnel intake



Photo 75: Rupert tailbay



Photo 76: Embankment dikes on Rupert tailbay



Photo 77: Eastmain River flowing out of tailbay



Photo 78: Rupert River









		
<p>Photo 79: Rupert River</p>	<p>Photo 80: Rupert River</p>	<p>Photo 81: Rupert River</p>
		
<p>Photo 82: Rupert River</p>	<p>Photo 83: Rupert River</p>	<p>Photo 84: Old Nemiscau trading post, with fire break funded by project</p>





Photo 85: Rapids



Photo 86: Rapids



Photo 87: Rapids



Photo 88: Rapids



Photo 89: Reduced water level section



Photo 90: Reduced water level section

Operation





Photo 91: Rupert River weir



Photo 92: Rupert River weir



Photo 93: Rupert River weir



Photo 94: Rupert River weir



Photo 95: Rupert River weir with constructed spawning sites



Photo 96: Weir with warning sign for boaters

Operation





Photo 97: Boat ramp with shelter above weir



Photo 98: Cree camp above weir



Photo 99: Cree camp site above weir



Photo 100: Helicopters on weir during assessment field visit



Photo 101: Riverbank shelter provided through Niskamoon Corporation



Photo 102: Weir from downstream





Photo 103: Route de la Baie-James crossing the Rupert River



Photo 104: Wetlands along Rupert River



Photo 105: Reduced flow section of the Rupert River



Photo 106: Bay below Rupert diversion dam



Photo 107: Deltaic islands on the Rupert River



Photo 108: Sign in Cowboy family camp





Photo 109: Cree fishing camp on left bank of lower Rupert River



Photo 110: Assessment team on lower Rupert River



Photo 111: Assessment team with Cree guides



Photo 112: Cisco



Photo 113: Pike



Photo 114: Sturgeon





Photo 115: Assessment team in fishing camp



Photo 116: Signage at Smoky Hill rapids

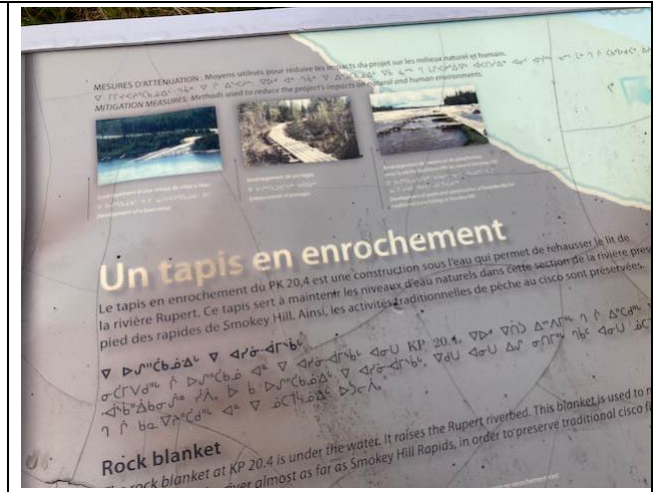


Photo 117: (Damaged) signage on Rupert River explaining works to maintain river levels



Photo 118: Smoked cisco at Cowboy family camp



Photo 119: Traditional fishing site in Smoky Hill rapids



Photo 120: Fish trap



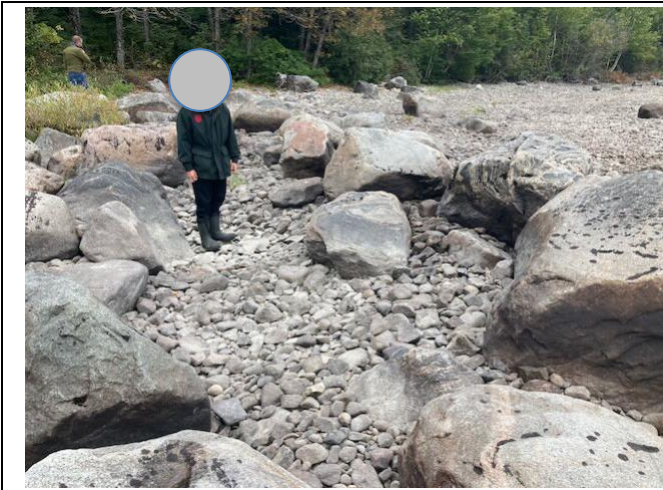


Photo 121: Cree in former fish trap, now dry because of reduced flows in Rupert River



Photo 122: Portage around Smoky Hill rapids



Photo 123: Riverbank shelter funded by project



Photo 124: Bear trap



Photo 125: Entrance to Waskaganish community



Photo 126: Waskaganish tribal administration





Photo 127: Housing in Waskaganish



Photo 128: Hydro-Québec substation



Photo 129: Water treatment plant funded by project



Photo 130: Public buildings



Photo 131: Assessment team at Waskaganish airport

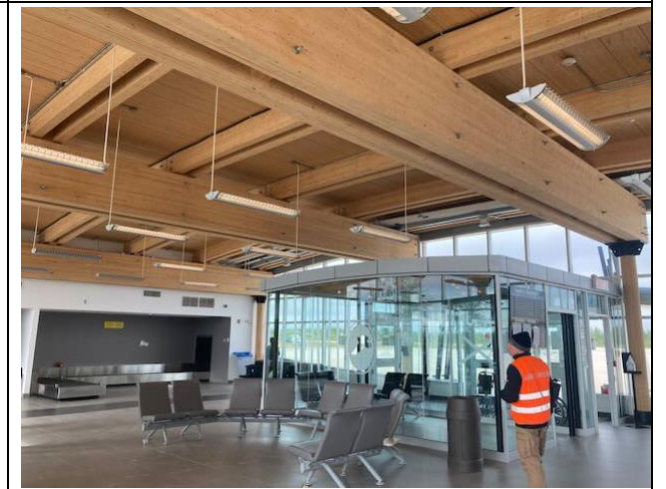


Photo 132: Airport building





Photo 133: Meeting of assessment team with Waskaganish representative on Monitoring Committee



Photo 134: Airport with James Bay in background



Photo 135: Rupert River entering James Bay



Photo 136: Fish passage on Rupert River



Photo 137: Mapping of fish spawning habitat around Eastmain reservoir



Photo 138: Safety signage at camp