

Welcome to your CDP Water Security Questionnaire 2022

W0. Introduction

W0.1

(W0.1) Give a general description of and introduction to your organization.

Canadian Natural is one of the largest independent crude oil and natural gas producers in the world. We have an effective and efficient, diversified combination of assets in North America, the UK portion of the North Sea and Offshore Africa, which enables us to generate significant value. Our balanced portfolio of light, synthetic, and heavy crude oil and natural gas represents one of the strongest and most diverse asset portfolios of any energy producer in the world. Our financial discipline, commitment to a strong balance sheet, and capacity to internally generate cash flows provide us the means to responsibly and sustainably grow our Company in the long term. At Canadian Natural, we are committed to conducting our business in a way that embraces the key piece of our mission statement "doing it right". Environmental stewardship is a fundamental value of our company and this is reflected in our approach to energy development. Our goal is to develop resources in a sustainable and responsible way. We are committed to managing and minimizing the environmental impacts of our operations during all phases of our projects. To reach high standards of environmental performance and achieve regulatory compliance, we adhere to the principles of continuous improvement, efficient operations and technological innovation. Our Environment team works together with management and all our operating divisions to ensure environmental stewardship is factored into our decision-making process. Through our Environmental Excellence program, we work together to proactively reduce greenhouse gas (GHG) emissions, minimize habitat disturbance and advance reclamation, minimize the impact on the landscape to conserve high-value biodiversity and wildlife, and reduce fresh water use. We foster a culture of environmental awareness where everyone has a vital role to play in identifying and mitigating environmental impacts from our operations. We reinforce environmental excellence through employee training, due diligence and the communication of environmental priorities.



W-OG0.1a

(W-OG0.1a) Which business divisions in the oil & gas sector apply to your organization?

Upstream

W0.2

(W0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date
Reporting year	January 1, 2021	December 31, 2021

W0.3

(W0.3) Select the countries/areas in which you operate.

Canada

W0.4

(W0.4) Select the currency used for all financial information disclosed throughout your response.

CAD

W0.5

(W0.5) Select the option that best describes the reporting boundary for companies, entities, or groups for which water impacts on your business are being reported.

Other, please specify

Reporting Canadian facilities for which we have operational control.



W0.6

(W0.6) Within this boundary, are there any geographies, facilities, water aspects, or other exclusions from your disclosure?

No

W0.7

(W0.7) Does your organization have an ISIN code or another unique identifier (e.g., Ticker, CUSIP, etc.)?

Indicate whether you are able to provide a unique identifier for your organization.	Provide your unique identifier
Yes, a CUSIP number	136385101

W1. Current state

W1.1

(W1.1) Rate the importance (current and future) of water quality and water quantity to the success of your business.

	Direct use importance rating	Indirect use importance rating	Please explain
Sufficient amounts of good quality freshwater available for use	Vital	Important	In direct operations, freshwater is utilized variably during production depending on the production scheme: For oil sands bitumen mining, heated water is used to separate bitumen from other formation constituents. During in situ extraction, freshwater is used in combination with saline water in the steam assisted gravity drainage (SAGD), cyclic steam stimulation (CCS) and steam flood processes. Freshwater is also used in the conventional water flood production process. Freshwater is vital in direct operations as it is used in production processes that are reliant on freshwater availability for sustainment. Freshwater is also used for drilling and completion and domestic purposes throughout our direct operations.



			<p>In indirect operations, freshwater is primarily used within our value chain including for fabrication, plant utility and domestic purposes. For these activities there are few opportunities for alternate sources.</p> <p>Future water importance rating for these activities is not anticipated to change in the short term, as it is anticipated that technologies and processes will continue to utilize freshwater in combination with saline water. However, our intensity of use is likely to decrease as new technologies become available.</p>
Sufficient amounts of recycled, brackish and/or produced water available for use	Vital	Important	<p>In direct operations, recycled, saline and/or produced water is utilized variably during the production process based on production scheme: During the oil sands bitumen mining process, recycled heated water is used to separate bitumen from other formation constituents. During in situ bitumen extraction, produced, recycled and saline water is used in the steam assisted gravity drainage process. Produced, recycled and saline water is also used in the water flood and hydraulic fracturing operations. This type of water is considered vital for direct operations because production processes are reliant on availability of these sources for sustainment.</p> <p>For indirect operations, saline, produced and recycled water are used for drilling and completions. This type of water is considered important for indirect operations, as it is anticipated that recycled, saline and produced water will remain vital for direct and indirect operations for the foreseeable future. Additionally, recycled, saline and produced water are important water sources for our operations in order to reduce fresh water and overall water use requirements. We maximize use of recycle to minimize fresh make-up water requirements as well as reduce freshwater in favour of saline and recycle water in operations, where possible.</p>

W1.2

(W1.2) Across all your operations, what proportion of the following water aspects are regularly measured and monitored?

	% of sites/facilities/operations	Please explain
Water withdrawals – total volumes	100%	<p>Measurement frequency: Continuously or daily Measurement method: Continuous flow metering or daily by volumetric calculation</p> <p>Canadian Natural’s water withdrawal total volumes are measured and monitored and typically reported monthly and/or annual to regulatory agencies. We measure, monitor and report according to best practices and established regulatory standards.</p>
Water withdrawals – volumes by source	100%	<p>Measurement frequency: Continuously or daily Measurement method: Continuous flow metering or daily by volumetric calculation</p> <p>Canadian Natural’s water withdrawal total volumes are measured and monitored and typically reported monthly and/or annual to regulatory agencies. We measure, monitor and report according to best practices and established regulatory standards.</p>
Produced water associated with your oil & gas sector activities - total volumes [only oil and gas sector]	100%	<p>Measurement frequency: Continuously Measurement method: Continuous flow metering</p> <p>Canadian Natural’s produced water volumes are measured and monitored and typically reported to regulatory agencies. We measure, monitor and report according to best practices and established regulatory standards.</p>
Water withdrawals quality	76-99	<p>Measurement frequency: Once prior to initial use (100%). In some cases periodically (e.g. annually) to understand quality of production fluid. Measurement method: Sampled for lab testing.</p> <p>Canadian Natural measures and monitors our surface water withdrawal quality aligned</p>

		with operational parameters. We report measure and monitor according to established best practices and regulatory standards.
Water discharges – total volumes	76-99	<p>Measurement frequency: Continuous Measurement method: Continuous flow metering or volumetric calculation</p> <p>Canadian Natural measures and monitors all of our water discharge volumes and reports to provincial and/or federal authorities within our operational areas. We measure, monitor and report according to established best practices and regulatory standards.</p>
Water discharges – volumes by destination	100%	<p>Measurement frequency: Continuous Measurement method: Continuous flow metering or volumetric calculation</p> <p>Canadian Natural measures and monitors all of our water discharge volumes by destination and reports to provincial and/or federal authorities within our operational areas. We measure, monitor and report according to established best practices and regulatory standards.</p>
Water discharges – volumes by treatment method	100%	<p>Measurement frequency: Continuous Measurement method: Continuous flow metering</p> <p>Canadian Natural measures and monitors all of our treated water discharge volumes by destination which and reports to provincial and/or federal authorities within our operational areas. We measure, monitor and report according to established best practices and regulatory standards.</p>
Water discharge quality – by standard effluent parameters	100%	<p>Measurement frequency: At least once, as required for characterization prior to release. Measurement method: Sampled for lab testing.</p> <p>Water discharge quality is measured and monitored to ensure that the required water quality objectives are met prior to release, complying with all provincial and federal</p>



		regulations pertaining to the discharge of water and surface water runoff. We measure, monitor and report according to established best practices and regulatory standards.
Water discharge quality – temperature	100%	<p>Measurement frequency: At least once, as required for characterization prior to release. Measurement method: Temperature transmitters</p> <p>Canadian Natural measures and monitors water discharge quality parameters required by regulation including temperature where required.</p>
Water consumption – total volume	100%	<p>Measurement frequency: Continuous Measurement method: Calculated using withdrawal and discharge volumes.</p> <p>Canadian Natural measures and monitors all of our water consumption volumes. We measure, monitor and report water use according to established best practices and regulatory standards.</p>
Water recycled/reused	100%	<p>Measurement frequency: Continuous Measurement method: Continuous flow metering</p> <p>Canadian Natural measures and monitors our water recycle/reuse volumes and reports to provincial and/or federal authorities within our operational areas. We measure, monitor and report according to established best practices and regulatory standards.</p>
The provision of fully-functioning, safely managed WASH services to all workers	100%	<p>Measurement frequency: Continuous Measurement method: Fully functioning and safely managed potable water treatment and wash water services for all workers.</p> <p>Canadian Natural provides fully functioning and safely managed potable water treatment and wash water services for all workers which includes provision of water quality, water quantity, water facilities/access, wastewater treatment/ disposal and other environmental issues according to national standards.</p>



W1.2b

(W1.2b) What are the total volumes of water withdrawn, discharged, and consumed across all your operations, and how do these volumes compare to the previous reporting year?

	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Total withdrawals	74,371	Lower	Withdrawals lower due to annual operational variance and removal of some rainwater volumes previously reported for consistency in reporting across all production methods.
Total discharges	11,365	Lower	Discharges lower due to annual operational variance and removal of some rainwater volumes previously reported for consistency in reporting across all production methods.
Total consumption	63,006	Lower	Consumption lower due to annual operational variance.

W-OG1.2c

(W-OG1.2c) In your oil & gas sector operations, what are the total volumes of water withdrawn, discharged, and consumed – by business division – and what are the trends compared to the previous reporting year?

	Volume (megaliters/year)	Comparison with previous reporting year %	Please explain
Total withdrawals - upstream	74,371	Lower	Withdrawals lower due to annual operational variance and removal of some rainwater volumes previously reported for consistency in reporting across all production methods.
Total discharges – upstream	11,365	Lower	Discharges lower due to annual operational variance and removal of some rainwater volumes previously reported for consistency in reporting across all production methods.
Total consumption – upstream	63,006	Lower	Consumption lower due to annual operational variance.

W1.2d

(W1.2d) Indicate whether water is withdrawn from areas with water stress and provide the proportion.

	Withdrawals are from areas with water stress	Please explain
Row 1	Yes	<p>Less than 0.1% of Canadian Natural's water use occurs within areas of water stress. Our operations are therefore at low risk of being affected by water scarcity.</p> <p>Canadian Natural used the WWF's Water Risk filter tool to assess whether we withdraw water from water stressed areas. The WWF's Water Risk filter tool Basin Physical Risk data assessed for Canada includes Water Scarcity, Flooding, Water</p>

	Quality, Ecosystem Service Status and Overall Basin Physical Risk. Relative to other countries for which WWF Water Risk Filter data is available, Canada ranks sixth out of 214 when considering physical risk, 11th when considering all risks, and is considered at low risk overall. Furthermore, Canada ranks above the 85th percentile in Water Scarcity which includes the WWF's Baseline Water Stress metric. Portions of the provinces of Alberta and Saskatchewan, Canada, include areas identified as of medium risk. A minor amount of Canadian Natural water withdrawal occurs within these areas (<0.1%).
--	--

W1.2h

(W1.2h) Provide total water withdrawal data by source.

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water, including rainwater, water from wetlands, rivers, and lakes	Relevant	53,340	Lower	Withdrawals lower due to annual operational variance and removal of some rainwater volumes previously reported for consistency in reporting across all production methods.
Brackish surface water/Seawater	Not relevant			
Groundwater – renewable	Not relevant			
Groundwater – non-renewable	Relevant	21,031	Higher	Withdrawals higher due to annual operational variance.
Produced/Entrained water	Not relevant			
Third party sources	Not relevant			



W1.2i

(W1.2i) Provide total water discharge data by destination.

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Please explain
Fresh surface water	Not relevant			
Brackish surface water/seawater	Not relevant			
Groundwater	Relevant	11,365	Lower	Discharges lower due to annual operational variance and removal of some rainwater volumes previously reported for consistency in reporting across all production methods.
Third-party destinations	Not relevant			



W1.2j

(W1.2j) Within your direct operations, indicate the highest level(s) to which you treat your discharge.

	Relevance of treatment level to discharge	Volume (megaliters/year)	Comparison of treated volume with previous reporting year	% of your sites/facilities/operations this volume applies to	Please explain
Tertiary treatment	Not relevant				
Secondary treatment	Not relevant				
Primary treatment only	Relevant	11,365	Lower	41-50	Applies to roughly one-third of production.
Discharge to the natural environment without treatment					
Discharge to a third party without treatment					
Other					

W1.3

(W1.3) Provide a figure for your organization's total water withdrawal efficiency.

	Revenue	Total water withdrawal volume (megaliters)	Total water withdrawal efficiency	Anticipated forward trend
Row 1				

W-OG1.3

(W-OG1.3) Do you calculate water intensity for your activities associated with the oil & gas sector?

Yes

W-OG1.3a

(W-OG1.3a) Provide water intensity information associated with your activities in the oil & gas sector.

Business division

Upstream

Water intensity value (m3)

0.21

Numerator: water aspect

Other, please specify

Freshwater consumption (in situ production)

Denominator

Other, please specify

m3 of bitumen

Comparison with previous reporting year

About the same

Please explain

In our in situ operations, freshwater use intensity went up by 0.03 m3 water/m3 oil in 2021 compared to 2020, due to an annual operational variance (oil production was slightly lower in 2021). Canadian Natural anticipates meeting our 2026 water intensity target of 40% reduction from 2017 baseline by 2026.

Canadian Natural's water management strategies focus on managing water use effectively and efficiently to reduce fresh water use and protect water sources. To do this, we leverage technology to maintain high recycle rates of produced water and use saline water for steam generation. For example, at our larger thermal in situ oil sands operations, where water is required for steam generation to recover bitumen, we continue to invest in water treatment, enhanced steam generation and further development of alternative sources, such as saline and produced water.

Our corporate water governance approach includes performance reporting with consistent industry metrics, and collaboration with industry and other stakeholders to achieve responsible and sustainable water use, supporting water stewardship initiatives that promote better water use. Canadian Natural's water management strategies focus on managing water use effectively and efficiently, while protecting water sources. They include reducing fresh water use by maximizing produced water recycling and saline water use; applying technology and increasing efficiencies to conserve fresh water use; and avoiding effects to water sources by following industry-leading operating practices and regulations, and minimizing water use, fresh water withdrawals and produced water disposal where possible.

Business division

Upstream

Water intensity value (m3)

1.19

Numerator: water aspect

Other, please specify

Freshwater consumption (oil sands mining)

Denominator

Other, please specify

m3 of bitumen

Comparison with previous reporting year

Lower

Please explain

In our oil sands mining operations, our fresh river water use intensity declined in 2021 by 0.19 m³ water/m³ bitumen compared to 2020, due to high precipitation and availability of collected rainwater.

Our corporate water governance approach includes performance reporting with consistent industry metrics, and collaboration with industry and other stakeholders to achieve responsible and sustainable water use, supporting water stewardship initiatives that promote better water use. Canadian Natural's water management strategies focus on managing water use effectively and efficiently, while protecting water sources. They include reducing fresh water use by maximizing produced water recycling and saline water use; applying technology and increasing efficiencies to conserve fresh water use; and avoiding effects to water sources by following industry-leading operating practices and regulations, and minimizing water use, fresh water withdrawals and produced water disposal where possible.

Highlights of our water performance for mining include tailings reduction technologies as part of water management. CO₂ addition to tailings and other technologies help maintain a high water recycling rate at our oil sands mining and upgrading operations, reducing the need for fresh water withdrawals from the Athabasca River to 42% of our annual licensed allocation. At our oil sands mining operations, river water use intensity has decreased by 48% since 2017 (from 2.29 to 1.19 barrels of water per barrel of synthetic crude oil) due to improved recycle water quality and availability of water from sources such as collected storm water.

Canadian Natural anticipates meeting our 2026 fresh river water use intensity target of 40% reduction from 2017 baseline by 2026.

W1.4

(W1.4) Do you engage with your value chain on water-related issues?

Yes, our suppliers



W1.4a

(W1.4a) What proportion of suppliers do you request to report on their water use, risks and/or management information and what proportion of your procurement spend does this represent?

Row 1

% of suppliers by number

51-75

Rationale for this coverage

To ensure environmental standards are consistently met by all contractors, a pre-qualification process has been adopted to ensure all contractors are pre-screened and made aware of Canadian Natural's environmental requirements. These procedures were developed and have been implemented across our operations to allow for a risk-based approach to selection, evaluation and ongoing management of contractors.

Our contractor screening tool (ComplyWorks) provides an enhanced view of compliance, communication and performance for contractors and suppliers, allowing us to manage compliance at multiple levels. This facilitates information publishing, monitoring of the accuracy of information provided in a supplier's record in various areas including Environmental policy and industry-specific supplier information that is subject to assessment and site audit. This improves industry performance and reduces risk within the supply chain.

As part of the prequalification process suppliers are required to confirm that they have a written environmental policy statement and environmental management system. These responses may be used in assessing risk related to use of suppliers.

Comment

Contractors and service providers must meet or exceed Canadian Natural's approach to business. We engage with suppliers and contractors with regards to environmental policies and procedures, and expect that suppliers and partners will manage environmental parameters using sound business practices.

W1.4b

(W1.4b) Provide details of any other water-related supplier engagement activity.

Type of engagement

Onboarding & compliance

Details of engagement

Requirement to adhere to our code of conduct regarding water stewardship and management

% of suppliers by number

76-100

% of total procurement spend

Unknown

Rationale for the coverage of your engagement

Our Corporate Statement on Environmental Management and Code of Integrity, Business Ethics and Conduct and Statement of Human Rights (Code) are integrated into our contracts for service providers, operators and management in all activities. Our Supply Management employees receive training on our Code, and review all aspects of the supplier management process, including contracts, as part of their job requirements. Environmental protection is a fundamental value of the company. We expect all staff to abide by established environmental policies and procedures. The company's operations will comply with all regulatory standards and guidelines. We operate within our licenses and regulatory approvals.

The environmental management plan and operating guidelines are based on guiding principles adopted by the Company, providing the vision and strategy to manage environmental risks and liabilities, and the tools to implement necessary practices and procedures to meet performance goals. It is integral to the way in which the company conducts our business.

Our policy is to seek continuous improvement in environmental performance.



Staff should report any environmental concern to their Manager, Vice-President Environmental, Regulatory and Stakeholder Affairs or the Chair of the Health, Safety, Asset Integrity and Environmental Committee of the Board of Directors of the Company.

Impact of the engagement and measures of success

All service providers, operators and management are expected to abide by our Code.

Comment

Type of engagement

Onboarding & compliance

Details of engagement

Other, please specify

Requirement to adhere to Canadian Natural Environmental Management Policy

% of suppliers by number

51-75

% of total procurement spend

Unknown

Rationale for the coverage of your engagement

Suppliers for products or services which present risk to the environment including water, must adhere to Canadian Natural's Environmental Management Policy as a contractual obligation.

Environmental stewardship is a fundamental value of the company. The company recognizes that every employee and contractor performing work on behalf of Canadian Natural has a vital role in identifying, minimizing and mitigating environmental impacts from our operations to improve environmental performance. Our commitment to responsible environmental management is incorporated into business activities through the following guiding principles (relevant water-requirements included):



- Reduce the environmental footprint of our activities by continually improving energy efficiency, managing GHG and air emissions, water use and other resources; reduce and recycle waste materials and preserve and restore natural biodiversity through closure planning and reclamation;
- Manage tailings and mine waste structures, including water retention structures, safely and responsibly from design to closure; and,
- Ensure that the company's operations comply with Applicable Laws, industry guidelines and company policies and procedures concerning environmental management

Impact of the engagement and measures of success

All service providers considered to present risk are expected to abide by the Policy.

Comment

W2. Business impacts

W2.1

(W2.1) Has your organization experienced any detrimental water-related impacts?

No

W2.2

(W2.2) In the reporting year, was your organization subject to any fines, enforcement orders, and/or other penalties for water-related regulatory violations?

No

W3. Procedures

W-OG3.1

(W-OG3.1) How does your organization identify and classify potential water pollutants associated with its activities in the oil & gas sector that may have a detrimental impact on water ecosystems or human health?

Our corporate policy on environmental protection is set out in our Corporate Statement on Environmental Management signed by the President and COO. This includes:

- Reduce the environmental footprint of our activities by continually improving energy efficiency, managing greenhouse gases, air emissions, water use and other resources; reduce and recycle waste materials and preserve and restore natural biodiversity through closure planning and reclamation;
- Manage tailings and mine waste structures, including water retention structures, safely and responsibly from design to closure; and
- Ensure that Canadian Natural operations comply with government regulations, industry guidelines and company policies and procedures concerning environmental management.

We understand water pollutants that may have a detrimental impact on water ecosystems or human health in our operations and implement policies, processes and standards through the following actions:

- All releases to water are reported in the Canadian National Pollutant Release Inventory (NPRI) according to the established standard "Guide to Reporting to the National Pollutant Release Inventory 2020-21". The NPRI collects information on pollution from facilities, such as releases from facilities to air, water or land.
- Spills are managed according to our Environmental Management System "Release Management and Reporting" procedure to minimize, prevent, remediate and report spills.
- Water releases from storm water retention ponds are monitored in accordance with specified standards that are protective of aquatic health in accordance with our procedures for "Surface Water Management" and "Surface Water Discharge".
- Air emissions are measured according to established standards defined in facility approvals as per the Alberta "Environmental Protection and Enhancement Act" (EPEA) and requirements including the "Continuous Emissions Monitoring System Code". Air quality monitoring is reported through regional monitoring, including the Oil Sands Monitoring program through passive and ambient air monitoring according to the established standard "Wood Buffalo Environmental Association Ambient Air Monitoring Program Quality Assurance Plan" and EPEA. Data is verified through direct

measurement of accumulations in snow pack and in surface water according to Government of Canada and provincial government established standards for water quality sampling.

- Potential groundwater pollutants are modelled using hydrogeological models and verified with groundwater sampling according to established government standards and our Environmental Management System "Groundwater Sampling Procedure".
- Monitoring programs are designed based on models of potential releases identified in the Environmental Impact Assessment of projects which are inclusive of regional modelling of pollutant dispersal as per jurisdictional standards including the Alberta Government "Environmental assessment program: standardized terms of reference [2019]".
- Water quality and quantity are important to local communities and the Athabasca River has a minimum traditional flow level to maintain accessibility to traditional lands by watercraft. Water management considers this flow level within the "Lower Athabasca River Water Quantity Framework". Water quality is monitored by government agencies, industry and municipalities to ensure aquatic health standards are applied and to determine background conditions when assessing effects from facility operations. This process has been established in the oil sands since the 1970s providing a baseline to monitor for change from pre-oil sands development in conjunction with the "Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines". For drilling operations, all additives to the water are publicly disclosed in accordance with the "Canadian Association of Petroleum Producers (CAPP) Hydraulic Fracturing Guidelines". Water with additives is safely disposed in keeping with standard practices to avoid pollution of surface water systems.

Value Chain

Across much of our supply chain, we assess company performance in Environmental, Health and Safety aspects including whether suppliers have been involved in reportable spills or releases in the past two years; whether spills or reportable volumes have occurred; and whether spills have been reported to the regulator in accordance with regulatory processes and standards.



W-OG3.1a

(W-OG3.1a) For each business division of your organization, describe how your organization minimizes the adverse impacts on water ecosystems or human health of potential water pollutants associated with your oil & gas sector activities.

Potential water pollutant	Business division	Description of water pollutant and potential impacts	Management procedures	Please explain
Hydrocarbons	Upstream	Natural gas and fuels / petroleum products Upstream impacts: the potential for spills into water bodies near the operation where hydrocarbons are used and/or extracted/produced/refined. Downstream impacts: water contamination (groundwater) from equipment malfunction or underground storage of hydrocarbons The scale and magnitude is dependent upon various factors, such as the size, location, concentration of the pollutant.	Compliance with effluent quality standards Measures to prevent spillage, leaching and leakages Community/stakeholder engagement	Our Environmental Management System includes multiple procedures to avoid and minimize impacts. Our "Release Management and Reporting" procedure is in place at all facilities and describes spill management processes including remedial actions and reporting requirements consistent with legislation, regulations and site-specific permit conditions. Water releases from storm water retention ponds are monitored in accordance with specified standards that are protective of aquatic health in accordance with our procedures for "Surface Water Management" and "Surface Water Discharge".



				<p>Potential groundwater pollutants are modelled using hydrogeological models and verified with groundwater sampling according to established government standards and our "Groundwater Sampling Procedure".</p> <p>Emergency response plans are in place for all major facilities and regular preparedness drills are conducted regularly.</p> <p>Our Environmental Management System has a process to conduct internal audit of performance with measurement and evaluation, against all procedures including those regarding water-related risks.</p>
Chemicals	Upstream	Natural gas and fuels / petroleum products Upstream impacts: the potential for spills into water bodies near the operation where hydrocarbons are used and/or extracted/produced/refined. Downstream impacts: water contamination (groundwater) from equipment malfunction or underground storage of hydrocarbons The scale and magnitude is dependent upon various factors, such as the size, location, concentration of the pollutant.	<p>Compliance with effluent quality standards</p> <p>Measures to prevent spillage, leaching and leakages</p> <p>Community/stakeholder engagement</p>	<p>Our Environmental Management System includes multiple procedures to avoid and minimize impacts.</p> <p>Our "Release Management and Reporting" procedure is in place at all facilities and describes spill management processes including remedial actions and reporting requirements consistent with legislation, regulations and site-</p>



			<p>specific permit conditions.</p> <p>Water releases from storm water retention ponds are monitored in accordance with specified standards that are protective of aquatic health in accordance with our procedures for "Surface Water Management" and "Surface Water Discharge".</p> <p>Potential groundwater pollutants are modelled using hydrogeological models and verified with groundwater sampling according to established government standards and our "Groundwater Sampling Procedure".</p> <p>Emergency response plans are in place for all major facilities and regular preparedness drills are conducted regularly.</p> <p>Our Environmental Management System has a process to conduct internal audit of performance with measurement and evaluation, against all procedures including those regarding water-related risks.</p>
--	--	--	---



<p>Drilling fluids</p>	<p>Upstream</p>	<p>Natural gas and fuels / petroleum products Upstream impacts: the potential for spills into water bodies near the operation where hydrocarbons are used and/or extracted/produced/refined. Downstream impacts: water contamination (groundwater) from equipment malfunction or underground storage of hydrocarbons The scale and magnitude is dependent upon various factors, such as the size, location, concentration of the pollutant.</p>	<p>Compliance with effluent quality standards Measures to prevent spillage, leaching and leakages Community/stakeholder engagement</p>	<p>Our Environmental Management System has multiple procedures to avoid and minimize impacts.</p> <p>Our "Release Management and Reporting" procedure is in place at all facilities and describes spill management processes including remedial actions and reporting requirements consistent with legislation, regulations and site-specific permit conditions.</p> <p>Water releases from storm water retention ponds are monitored in accordance with specified standards that are protective of aquatic health in accordance with our procedures for "Surface Water Management" and "Surface Water Discharge".</p> <p>Potential groundwater pollutants are modelled using hydrogeological models and verified with groundwater sampling according to established government standards and our "Groundwater Sampling Procedure".</p> <p>Emergency response plans are in</p>
------------------------	-----------------	---	--	--



				<p>place for all major facilities and regular preparedness drills are conducted regularly.</p> <p>Our Environmental Management System has a process to conduct internal audit of performance with measurement and evaluation, against all procedures including those regarding water-related risks.</p>
--	--	--	--	---

W3.3

(W3.3) Does your organization undertake a water-related risk assessment?

Yes, water-related risks are assessed

W3.3a

(W3.3a) Select the options that best describe your procedures for identifying and assessing water-related risks.

Value chain stage

Direct operations

Coverage

Full

Risk assessment procedure

Water risks are assessed as part of other company-wide risk assessment system

Frequency of assessment

Annually

How far into the future are risks considered?

More than 6 years

Type of tools and methods used

Tools on the market

Enterprise risk management

Tools and methods used

Other, please specify

- Enterprise Risk Management

Contextual issues considered

Water availability at a basin/catchment level

Water quality at a basin/catchment level

Stakeholder conflicts concerning water resources at a basin/catchment level

Water regulatory frameworks

Status of ecosystems and habitats

Stakeholders considered

Customers

Employees

Investors

Local communities

NGOs

Regulators

Suppliers

Water utilities at a local level

Comment

Water related risks are assessed specific to water source and potential effects of operations. Canadian Natural applies a risk review process using standard risk assessment tools to quantify probability and consequence of effects from operations. A registry of environmental aspects is maintained and reviewed annually to allow for any changes in activities, technologies or regulatory requirements. A life cycle perspective is applied considering planning, construction, operations and final closure. Each environmental aspect is assessed to avoid, minimize and mitigate effects and this is reviewed annually against changes in regulatory standards and advancing technologies. Internal operational controls are developed with senior management to track performance. Risk management for water is part of the Environmental Management System (EMS) used to identify environmental risk and to establish control processes.

As part of the EMS development and implementation, all activities from operations are identified and risk ranked against potential environmental aspects. Potential impacts are risk ranked and operational controls are put in place to control those risks.

Risk assessment of activities related to water are embedded in the Corporate Statement on Environmental Management and the EMS to track and review risk ranking and appropriate controls, all of which are reviewed annually by management.

Value chain stage

Supply chain

Coverage

Partial

Risk assessment procedure

Water risks are assessed as part of other company-wide risk assessment system

Frequency of assessment

Annually

How far into the future are risks considered?

1 to 3 years

Type of tools and methods used

Tools on the market

Tools and methods used

Other, please specify

Internal company methods

Contextual issues considered

Water quality at a basin/catchment level

Water regulatory frameworks

Stakeholders considered

Regulators

Comment

Using our contractor risk matrix and contractor screening tool (ComplyWorks) we assess company performance in Environmental, Health and Safety aspects including whether suppliers have been involved in reportable spills or releases in the past two years; whether spills or reportable volumes have occurred; and whether spills have been reported to the regulator in accordance with regulatory processes and standards.

W3.3b

(W3.3b) Describe your organization's process for identifying, assessing, and responding to water-related risks within your direct operations and other stages of your value chain.

Our approach to water related integrity management works to prevent failures, by placing a strong focus on proactive management, from risk identification to mitigation. We assess each operation based on the likelihood of failure and the potential consequences of that failure. Evaluations and inspections are ongoing (including annual inspections as existing asset conditions change and new assets are acquired). Our approach to asset integrity management ensures pipelines are designed, built and operated to be safe, reliable and sustainable and to proactively prevent failures that may potentially impact water resources. These processes apply equally across all facets of our operations.

W4. Risks and opportunities

W4.1

(W4.1) Have you identified any inherent water-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes, only within our direct operations

W4.1a

(W4.1a) How does your organization define substantive financial or strategic impact on your business?

Given the dynamic nature of risk, Canadian Natural uses a multidisciplinary Enterprise Risk Management ("ERM") framework to identify, assess, and mitigate risks that may affect the Company and our operations. The ERM framework incorporates a matrix approach to risk assessment that categorizes and aligns risks across operational areas, allowing teams to better understand the identified risks, their impacts on our operations and the mitigation being undertaken to address these risks. This allows management to monitor potential risk exposures and the steps taken to address the identified risks or otherwise mitigate these exposures by identifying those individuals on the Company's Management Committee responsible for each of the identified risks. Reporting on the risks and related mitigating activity throughout the Company is also part of the ERM framework.

We use an Enterprise Risk Matrix to determine likelihood (probability) and impact of risks, and classify them as High, Moderate, or Low. A classification of 'High' would be considered a substantive financial or strategic impact to Canadian Natural's business. This process helps us prioritize water-related risks and determine materiality.

W4.1b

(W4.1b) What is the total number of facilities exposed to water risks with the potential to have a substantive financial or strategic impact on your business, and what proportion of your company-wide facilities does this represent?

	Total number of facilities exposed to water risk	% company-wide facilities this represents	Comment
Row 1	6	76-99	Canadian Natural operates a wide scope of oil and gas facilities of which those with the highest need for water are included in this response. These include oil sands mining and thermal in situ.

W4.1c

(W4.1c) By river basin, what is the number and proportion of facilities exposed to water risks that could have a substantive financial or strategic impact on your business, and what is the potential business impact associated with those facilities?

Country/Area & River basin

Canada
Mackenzie River

Number of facilities exposed to water risk

6

% company-wide facilities this represents

76-99

% company's global oil & gas production volume that could be affected by these facilities

26-50

% company's total global revenue that could be affected

21-30

Comment

The risk of water availability is related to operations with surface water withdrawal as those have greater variation in annual flows, changes in ice, sediment, climate change and potential to be affected by changes in water quality from upstream events.

W4.2

(W4.2) Provide details of identified risks in your direct operations with the potential to have a substantive financial or strategic impact on your business, and your response to those risks.

Country/Area & River basin

Canada
Mackenzie River

Type of risk & Primary risk driver

Chronic physical
Seasonal supply variability/inter annual variability

Primary potential impact

Reduction or disruption in production capacity

Company-specific description

Water availability from the Athabasca River for the Horizon oil sands mine. This is mitigated with the construction of 28 days of water storage, a time period determined to mitigate potential water availability limitation that could result from extreme low flow conditions or water quality issues related to upstream events.

Timeframe

More than 6 years

Magnitude of potential impact

Low

Likelihood

Unlikely

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

Potential financial impact figure - minimum (currency)

Potential financial impact figure - maximum (currency)

Explanation of financial impact

Mitigated with the construction of 28 days of water storage.

Primary response to risk

Increase capital expenditure

Description of response

Mitigated with the construction of 28 days of water storage, a time period determined to mitigate potential water availability limitation that could result from extreme low flow conditions or water quality issues related to upstream events.

Cost of response

0

Explanation of cost of response

Infrastructure mitigates this risk.

W4.2c

(W4.2c) Why does your organization not consider itself exposed to water risks in its value chain (beyond direct operations) with the potential to have a substantive financial or strategic impact?

	Primary reason	Please explain
Row 1	Risks exist, but no substantive impact anticipated	Canadian oil sands mining, thermal in situ and conventional operations have acquired and maintained water licenses to adequately meet planned requirements. Watershed level assessments of water availability provide assurances that water will continue to be available. As an upstream producer water licenses are obtained in areas with limited other users of water and in areas with adequate supply. Continued efficiencies in water use, recycle rates and shifting to more saline usage further reduces the need for fresh water providing greater certainty for long-term sustained access to water.

W4.3

(W4.3) Have you identified any water-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes, we have identified opportunities, and some/all are being realized

W4.3a

(W4.3a) Provide details of opportunities currently being realized that could have a substantive financial or strategic impact on your business.

Type of opportunity

Products and services

Primary water-related opportunity

Other, please specify

Treating process water during reclamation

Company-specific description & strategy to realize opportunity

H2nanO

Canadian Natural and other oil sands producers are working with water treatment company H2nanO and researchers at the University of Toronto on a sunlight-activated, reusable treatment process for process-affected water. This treatment, called Solar Pass, uses tiny particles that when mixed with water and activated by sunlight, continuously treat and eliminate organics. This strategic opportunity allows for an active demonstration pilot to assess the viability of treating oil sands process-affected water.

Demonstration Pit Lakes

Canadian Natural is among the participants in the first commercial scale demonstration pit lake designed to treat process-affected water, sequester mature fine tailings as they settle, and act as a sustainable landscape component. Through Canada's Oil Sands Innovation Alliance (COSIA), Canadian Natural contributes funds and provides technical input in the research and monitoring program of this project. We're also involved in a collaborative project with oil sands operators and Alberta InnoTech to evaluate the effects of tailings materials from different operators on water chemistry and aquatic biota. The experiments are conducted in Vegreville, AB, in an outdoor array of mesocosms or small-scale experimental columns. This strategic opportunity allows for development of techniques for efficient treatment of process-affected water.

In-Pit Extraction Process for Tailings

As part of our continuous investments in research and technology, Canadian Natural focuses on improving performance by enhancing our processes while reducing environmental impact. At Horizon Oil Sands, a field pilot was completed on an alternative bitumen extraction method — the In-Pit Extraction Process (IPEP). This involves a relocatable, modular extraction plant that processes ore and separates bitumen right in the mine pit. IPEP reduces materials transportation by truck, pipeline length and the energy needed to pump material. This strategic opportunity allows for production of stackable dry tailings, potentially eliminating the need for future fluid tailings ponds.

Estimated timeframe for realization

More than 6 years

Magnitude of potential financial impact

High

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact

Potential to reduce operational costs and provide an environmentally effective long-term solutions.

Type of opportunity

Efficiency

Primary water-related opportunity

Other, please specify

Increasing water recycling efficiency and lowering emissions

Company-specific description & strategy to realize opportunity

The Water Technology Development Centre (WTDC)

In collaboration with other oil sands operators, we have established a world-class water technology development centre at an operating oil sands facility to conduct collaborative research that could reduce the cost of water recycling, improve the reliability and efficiency of recycling technology, and reduce the environmental footprint of facilities. The WTDC is a dedicated facility to test new technologies on 'live' process fluids in real-world conditions. Its unique design allows operators to strategically assess new technologies by sharing risks and costs so they can drive the development of more technologies than they could on their own. The test centre will speed technology development and implementation, shortening the current eight-year timeframe required to field test technologies and move them to commercial application, leading to an accelerated return on investment.

Estimated timeframe for realization

More than 6 years

Magnitude of potential financial impact

High

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact

- Accelerate the development and commercialization of new water treatment technologies while shortening the time required to field test.
- Increase the number of technologies tested, while collaboratively managing the risks, leveraging multi-company expertise, and lowering the costs of technology development.
- Reduce the costs of commercial facility development.

Type of opportunity

Efficiency

Primary water-related opportunity

Other, please specify

Developing new ways to treat recycled water and lower emissions

Company-specific description & strategy to realize opportunity

High Temperature Reverse Osmosis

In partnership with industry and Suez Water Technologies, we are developing High Temperature Reverse Osmosis (HTRO) membranes to enable the in situ oil sands water treatment process to operate at higher temperatures, thus eliminating the need for cooling and re-heating the water. Reverse osmosis is commonly used for water treatment in other industries, but at temperatures well below 100°C. This strategic opportunity would allow us to keep process water hot throughout the treatment process, providing significant cost savings, and reductions in land footprint.

Estimated timeframe for realization

Magnitude of potential financial impact

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact

- Significantly reduce the capital cost of new SAGD facilities.
- Significantly reduce natural gas consumption, reducing fuel costs

Type of opportunity

Products and services

Primary water-related opportunity

Other, please specify

Recovering usable chemicals from saline water

Company-specific description & strategy to realize opportunity

Mangrove Water Technologies for Saline Water Treatment

Horizon Oil Sands is a unique site with groundwater that's too salty to be used in the extraction process. Through regular operations, the water is being temporarily removed and stored. In 2019, Canadian Natural partnered with Mangrove Water Technologies Ltd, a company based in Vancouver, Canada, that is focused on commercializing a technology for the conversion of brines to desalinated water and chemicals for on-site use. The technology applies an electric current to a novel electrochemical process that combines aspects of fuel cells with electrodialysis to separate the salts into different compounds. Along with the water, it produces industrial strength hydrochloric acid, commonly used for in situ extraction, and caustic acid, used in the bitumen mining process. Canadian Natural is currently conducting a small-scale pilot to determine if it is economically and technologically feasible, and advancing the targeted environmental outcomes. This strategic opportunity could provide low cost production of useful chemicals while treating saline water at our Horizon operations.

Estimated timeframe for realization

More than 6 years

Magnitude of potential financial impact

Low

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact

- Potential to produce hydrochloric acid used in in-situ extraction that could be sold to other companies.
- Reduce operating costs through reduced risks associated with an on-site waste stream.
- Creates a high-value water treatment process for potential application in other industrial sectors, in Canada and elsewhere in the world.

W5. Facility-level water accounting

W5.1

(W5.1) For each facility referenced in W4.1c, provide coordinates, water accounting data, and a comparison with the previous reporting year.

Facility reference number

Facility 1

Facility name (optional)

Primrose and Wolf Lake Thermal

Country/Area & River basin

Canada
Mackenzie River

Latitude

54.4624

Longitude

-110.3445

Located in area with water stress

No

Oil & gas sector business division

Upstream

Total water withdrawals at this facility (megaliters/year)

3,965

Comparison of total withdrawals with previous reporting year

Higher

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

0

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

3,965

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

3,550

Comparison of total discharges with previous reporting year

Higher

Discharges to fresh surface water

0

Discharges to brackish surface water/seawater

0

Discharges to groundwater

3,550

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

415

Comparison of total consumption with previous reporting year

Lower

Please explain

Consumption lower due to annual operational variance.

Facility reference number

Facility 2

Facility name (optional)

Kirby Thermal

Country/Area & River basin

Canada

Mackenzie River

Latitude

55.2733

Longitude

-111.1331

Located in area with water stress

No

Oil & gas sector business division

Upstream

Total water withdrawals at this facility (megaliters/year)

465

Comparison of total withdrawals with previous reporting year

Lower

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

0

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

465

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

704

Comparison of total discharges with previous reporting year

Higher

Discharges to fresh surface water

0

Discharges to brackish surface water/seawater

0

Discharges to groundwater

704

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

-240

Comparison of total consumption with previous reporting year

Lower

Please explain

Consumption lower due to annual operational variance.
Negative consumption is a result of negative reservoir retention.

Facility reference number

Facility 3

Facility name (optional)

Jackfish Thermal

Country/Area & River basin

Canada
Mackenzie River

Latitude

55.3057

Longitude

-110.5656

Located in area with water stress

No

Oil & gas sector business division

Upstream

Total water withdrawals at this facility (megaliters/year)

1,276

Comparison of total withdrawals with previous reporting year

Higher

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

0

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

1,276

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

1,561

Comparison of total discharges with previous reporting year

Higher

Discharges to fresh surface water

0

Discharges to brackish surface water/seawater

0



Discharges to groundwater

1,561

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

-284

Comparison of total consumption with previous reporting year

Lower

Please explain

Consumption lower due to annual operational variance.

Negative consumption is a result of negative reservoir retention.

Facility reference number

Facility 4

Facility name (optional)

Peace River Thermal

Country/Area & River basin

Canada

Mackenzie River

Latitude

56.23

Longitude

-116.4739

Located in area with water stress

No

Oil & gas sector business division

Upstream

Total water withdrawals at this facility (megaliters/year)

3,379

Comparison of total withdrawals with previous reporting year

Higher

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

1,998

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

0

Withdrawals from produced/entrained water

1,381

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

1,381

Comparison of total discharges with previous reporting year

About the same

Discharges to fresh surface water

0

Discharges to brackish surface water/seawater

0

Discharges to groundwater

1,381

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

1,998

Comparison of total consumption with previous reporting year

Higher

Please explain

Consumption higher due to annual operational variance.

Facility reference number

Facility 5

Facility name (optional)

Albian Oil Sands Mine

Country/Area & River basin

Canada
Mackenzie River

Latitude

57.1726

Longitude

-111.3334

Located in area with water stress

No

Oil & gas sector business division

Upstream

Total water withdrawals at this facility (megaliters/year)

25,628

Comparison of total withdrawals with previous reporting year

Higher

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

17,391

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

8,237

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

0

Comparison of total discharges with previous reporting year

About the same

Discharges to fresh surface water

0

Discharges to brackish surface water/seawater

0

Discharges to groundwater

0

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

25,628

Comparison of total consumption with previous reporting year

Higher

Please explain

Consumption higher due to annual operational variance.

Facility reference number

Facility 6

Facility name (optional)

Horizon Oil Sands Mine

Country/Area & River basin

Canada

Mackenzie River

Latitude

57.2127

Longitude

-111.4431

Located in area with water stress

No

Oil & gas sector business division

Upstream

Total water withdrawals at this facility (megaliters/year)

32,144

Comparison of total withdrawals with previous reporting year

Lower

Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

31,863

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

281

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

0

Comparison of total discharges with previous reporting year

About the same

Discharges to fresh surface water

0

Discharges to brackish surface water/seawater

0

Discharges to groundwater

0

Discharges to third party destinations

0



Total water consumption at this facility (megaliters/year)

32,144

Comparison of total consumption with previous reporting year

Lower

Please explain

Consumption lower due to annual operational variance.

W5.1a

(W5.1a) For the facilities referenced in W5.1, what proportion of water accounting data has been third party verified?

Water withdrawals – total volumes

% verified

76-100

Verification standard used

All of our withdrawal data for the subject facilities is submitted to the Alberta Energy Regulator for compliance and data verification as per regulatory requirements on a monthly and annual basis. In addition, most withdrawal volumes are prepared by third party consultants who conduct quality assurance and quality control. Measurement standards are applied per the Alberta Environment Water Measurement Guidebook.

Water withdrawals – volume by source

% verified

76-100

Verification standard used

All of our withdrawal data for the subject facilities is submitted to the Alberta Energy Regulator for compliance and data verification as per regulatory requirements on a monthly and annual basis. In addition, most withdrawal volumes are prepared by third party consultants who conduct quality assurance and quality control. Measurement standards are applied per the Alberta Environment Water Measurement Guidebook.

Water withdrawals – quality by standard water quality parameters

% verified

Not verified

Please explain

Water discharges – total volumes

% verified

76-100

Verification standard used

All groundwater discharge volumes are monitored and reported the Alberta Energy Regulator per appropriate directives describing various aspects of water management requirements. The Alberta Energy Regulator specifies water disposal limits and includes guidance for reporting facility water streams to Petrinex. The Alberta Energy Regulator provides formulas for water make-up, water productivity ratios, and produced-water recycle used for monitoring and comparing thermal operations in Alberta. Volumetric data are published on the Alberta Energy Regulator website.

Water discharges – volume by destination

% verified

76-100

Verification standard used

All groundwater discharge volumes are monitored and reported the Alberta Energy Regulator per appropriate directives describing various aspects of water management requirements. The Alberta Energy Regulator specifies water disposal limits and includes guidance for reporting facility water streams to Petrinex. The Alberta Energy Regulator provides formulas for water make-up, water productivity ratios, and produced-water recycle used for monitoring and comparing thermal operations in Alberta. Volumetric data are published on the Alberta Energy Regulator website.

Water discharges – volume by final treatment level

% verified

Water discharges – quality by standard water quality parameters

% verified

Water consumption – total volume

% verified

51-75

Verification standard used

The Alberta Energy Regulator provides formulas for water make-up, water productivity ratios, and produced-water recycle used for monitoring and comparing thermal operations in Alberta. Scheme volumetric data are published on the Alberta Energy Regulator website in the Thermal In Situ Water Publication.

W6. Governance

W6.1

(W6.1) Does your organization have a water policy?

Yes, we have a documented water policy, but it is not publicly available

W6.1a

(W6.1a) Select the options that best describe the scope and content of your water policy.

	Scope	Content	Please explain
Row 1	Company-wide	Description of business dependency on water Reference to international standards and widely-recognized water initiatives Company water targets and goals Commitment to water-related innovation Commitment to water stewardship and/or collective action	<p>The World Resources Institute (WRI) defines a country as experiencing water stress when water supplies are less than 1,700 m3/person/year. Canada does not fit this definition.</p> <p>Southern Alberta is identified as a water short area according to the Alberta 2006 Water Conservation and Allocation Policy for Oilfield Injection. Water is an important resource and also important to our operations, as a result protecting and using it responsibly is critical. Canadian Natural operates in accordance with our corporate statement on environmental management that is updated annually to reflect current ISO 14001:2015 standards and is signed-off by senior management.</p> <p>This Corporate Statement on Environmental Management provides policy direction on water use and specifies our commitment to environmental performance, assessment and mitigation of potential impacts, and the consideration of social and economic factors; and addresses the responsible and safe management of water retention structures from design to closure. Policy direction is provided to ensure that we engage and communicate with the public regarding our activities. Within our Environmental Management System (EMS) the potential effect to water resources are identified and controls are implemented for avoiding, mitigating and minimizing potential impacts. Projects are designed to maximize water use efficiency are monitored and evaluated for improvements. Where appropriate, performance targets are set based on industry standards or engineered potential. The manual identifies targets to be specified as performance indicators with appropriate monitoring and reporting. Water withdrawals for the</p>



		<p>mining sector are managed through an industry agreement to address cumulative water withdrawals. This Water Management Agreement is updated annually and posted on the Alberta Energy Regulator's website. Canadian Natural's water management strategies include: reducing fresh water use by maximizing produced water recycling and saline water use; applying technology and increasing efficiencies to conserve fresh water; avoiding effects to water sources through industry-leading operating practices and regulations, and minimizing fresh water withdrawals and produced water disposal, where possible. While specific projects vary in their water management strategies to account for reservoir and technology requirements, we work to ensure all strategies are consistently applied.</p>
--	--	---

W6.2

(W6.2) Is there board level oversight of water-related issues within your organization?

Yes

W6.2a

(W6.2a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for water-related issues.

Position of individual	Please explain
Director on board	<p>The Board of Directors (BOD) is responsible for overseeing and ensuring the Management Committee has appropriate and effective measures in place to create and execute strategies, including water-related issues management. The BOD brings experience & knowledge from senior positions held in the public and private sectors such as oil & natural gas, energy storage solutions, tech, legal, finance, and health. Directors on the Health, Safety, Asset Integrity and Environment (HSAI&E) Committee of the Board receive quarterly updates from the Environment, Social, and Governance Committee. They are part of the reporting process and responsible for monitoring implementation of sustainability programs. Each year, Management presents to the Board on the Environmental Stewardship Report and key developments anticipated in the following year, as well as the management of environmental risks including water and the role of innovation to address and continuously improve environmental stewardship and performance.</p>

W6.2b

(W6.2b) Provide further details on the board’s oversight of water-related issues.

	Frequency that water-related issues are a scheduled agenda item	Governance mechanisms into which water-related issues are integrated	Please explain
Row 1	Scheduled - some meetings	<ul style="list-style-type: none"> Monitoring implementation and performance Reviewing and guiding annual budgets Reviewing and guiding business plans Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding strategy Setting performance objectives 	<p>Review internal Stewardship reports that document objectives, performance and key performance indicators, targets actions and initiatives undertaken to mitigate water-related risk. The Directors in the HSAI&E Committee oversee and monitor company-wide efforts to support, manage and improve performance, and ensure the effectiveness of our sustainability programs, including health, safety, asset integrity, environmental risk and social initiatives. The Health and Safety, Asset Integrity, Environment, Stakeholder Relations and Community Investment groups report on a regular basis to Senior Management in the Environment, Social, and Governance (ESG) Committee, who in turn provide updates to the HSAI&E Committee. Progress is tracked regularly and shared across all levels of employees, including targets. The Board of Directors has responsibility for overseeing and ensuring that Management Committee has appropriate sustainability programs in place, including the identification of water-related risks and opportunities, and their implications for our business strategies across Canadian Natural. The Board of Directors provides expertise and oversight on specific ESG factors, through the roles and responsibilities of the following Board committees: Nominating, Governance and Risk Committee – Corporate governance practices and the management of enterprise risk exposure; and HSAI&E Committee – Occupational and process safety, asset integrity, environmental stewardship, regulatory, risk management, sustainability and social initiatives. Processes for identifying, assessing, and managing climate-related issues are integrated into our Enterprise Risk Management (ERM) framework. The Nominating, Governance and Risk Committee of the Board reviews and monitors the status of ERM activities, including environmental and climate-related regulatory and operational risks, and the steps Management has taken to implement mitigating actions.</p>



			Performance results are reported internally through a management review process and externally through the annual sustainability report. Annual performance objectives and targets are tracked and corporate status reports are presented quarterly to senior management and Board of Directors.
--	--	--	--

W6.2d

(W6.2d) Does your organization have at least one board member with competence on water-related issues?

	Board member(s) have competence on water-related issues	Criteria used to assess competence of board member(s) on water-related issues
Row 1	Yes	<p>The Board has constituted the Nominating, Governance and Risk Committee to annually conduct a self-assessment of the Board’s performance, an assessment of Board members and its committees, (with each committee assessing its members), and to recommend to the Board, nominees for appointment of new directors to fill vacancies or meet additional needs of the Board. Through the Board evaluation process and ongoing monitoring of the needs of the Corporation, desired expertise, diversity and skill sets are identified and individuals that possess the required experience and skills are contacted by the Chair of the Nominating, Governance and Risk Committee.</p> <p>Nominees for director are selected on the basis of, among other things, broad perspective, integrity, independence of judgment, experience, expertise, diversity in background, experience and skills, ability to make independent analytical inquiries, understanding of the Corporation’s business environment and willingness to devote adequate time and effort to Board responsibilities and such other factors as it deems appropriate given the current needs of the Board and Corporation, to maintain a balance of diversity, knowledge, experience, background and capabilities. This evaluation includes consideration of nominee expertise and experience in environmental aspects of our activities including water-related issues.</p>



W6.3

(W6.3) Provide the highest management-level position(s) or committee(s) with responsibility for water-related issues (do not include the names of individuals).

Name of the position(s) and/or committee(s)

President

Responsibility

Assessing water-related risks and opportunities

Managing water-related risks and opportunities

Frequency of reporting to the board on water-related issues

Quarterly

Please explain

The President has responsibility for assessing and managing water-related risks and opportunities on a quarterly basis.

W6.4

(W6.4) Do you provide incentives to C-suite employees or board members for the management of water-related issues?

	Provide incentives for management of water-related issues	Comment
Row 1	Yes	Our Performance Scorecard has 15% of performance measured against Safety, Asset Integrity and Environment KPIs with the goal of continuous improvement. Our water-related KPIs include GHG Emissions Intensity (tonnes/BOE), due to the effect of water management on our steam-to-oil ratio (SOR) and ultimately our GHG emissions. Our executive compensation policies and procedures focus on a pay-for-performance philosophy and align with the interests of shareholders. Our compensation program is designed to: Reward creation of long-term shareholder value; Reflect short-, mid- and long-term corporate performance; Maintain an appropriate balance between base salary and short-term

		and long-term incentive opportunities, with a distinct emphasis on compensation that is “at risk”; Be competitive to attract and retain talented individuals; Encourage Common Share ownership by employees; and Align the pay-for-performance approach to executive compensation to the long-term interests of the shareholders.
--	--	---

W6.4a

(W6.4a) What incentives are provided to C-suite employees or board members for the management of water-related issues (do not include the names of individuals)?

	Role(s) entitled to incentive	Performance indicator	Please explain
Monetary reward	Other, please specify President	Reduction of water withdrawals Improvements in efficiency - direct operations Improvements in waste water quality - direct operations Other, please specify Improved recycle rates	<p>With the exception of Canadian Natural’s Debt to Book metric, which has been established to reflect all commodity price cycles, we established 2021 performance targets as part of our 2021 budget guidance, which was released on December 9, 2020. The resulting performance measures are assigned weightings as indicated in the Performance Scorecard (available in our 2021 Management Information Circular) and the resulting overall score is utilized by the Compensation Committee to determine the performance bonus for the President. The cash bonus awarded is based on Canadian Natural’s and the individual’s performance over the year in contributing to the company meeting its yearly operating plans and its operating and financial goals as evidenced by corporate performance. Greenhouse gas emissions intensity (tonnes/BOE) is one metric in the corporate Performance Scorecard on which performance bonuses are based.</p> <p>How we manage water is directly tied to our overall GHG performance metric, specifically through the management of our Steam-to-Oil Ratio (SOR). This ratio describes the amount of heated water needed to produce steam to recover bitumen in the Steam-Assisted Gravity Drainage (SAGD) process, an in situ method of oil recovery. The SAGD process requires natural gas to heat the steam which results in the production of GHGs. Therefore if water is managed effectively, we can lower the SOR and in turn, lower GHG emissions.</p>



Non-monetary reward			
---------------------	--	--	--

W6.5

(W6.5) Do you engage in activities that could either directly or indirectly influence public policy on water through any of the following?

Yes, trade associations

Yes, funding research organizations

W6.5a

(W6.5a) What processes do you have in place to ensure that all of your direct and indirect activities seeking to influence policy are consistent with your water policy/water commitments?

Canadian Natural is engaged in the Alberta Wetland Policy development process, as well as the Water for Life Strategy, providing guidance for water use. Our involvement helps to ensure that the intent of reducing, recycling and returning water is done with an approach that aligns with our commitment to responsible water management. Water management is also coordinated amongst companies, such as the Water Management Agreement for the Lower Athabasca River and industry engagement through associations like the Canadian Association of Petroleum Producers (CAPP). Canadian Natural also supports research programs that support water policy, including multi-stakeholder approaches to water management of the Lower Athabasca to monitor and model water flows under ice conditions, the potential effects of water withdrawal and return, as well as water quality assessments. Facility-based water research programs include water efficiency improvements of treatment to increase the use of saline water and reduce fresh water in thermal projects, maximizing efficiencies of bitumen extraction in oil sands mining operations and a full cycle assessment water use in upgrading to improve recycle and reuse. We also invest in ongoing work examining water removal from tailings through several programs such as the In Pit Extraction Process currently being piloted. Our public commitments to responsible water stewardship and internal promotion help us maintain consistency with our water commitments.

W6.6

(W6.6) Did your organization include information about its response to water-related risks in its most recent mainstream financial report?

Yes (you may attach the report - this is optional)

W7. Business strategy

W7.1

(W7.1) Are water-related issues integrated into any aspects of your long-term strategic business plan, and if so how?

	Are water-related issues integrated?	Long-term time horizon (years)	Please explain
Long-term business objectives	Yes, water-related issues are integrated	> 30	Water use planning considers certainty for access to water for the life of a project, up to 50 years. Project planning requires confirmation of water sources through long-term surface water flow measurements or project specific groundwater flow data to augment regional data to model potential aquifer impact. The Horizon Oil Sands Mine was planned to manage surface and groundwater in consideration of risks related to restrictions in water withdrawal from the Athabasca River during extreme low flow events.
Strategy for achieving long-term objectives	Yes, water-related issues are integrated	> 30	To address potential limitations to water access, water storage for 28 days was constructed to maintain water access and aquatic ecology of the Athabasca River. For the Horizon, Muskeg River and Jackpine oil sands mines, water impacts to fisheries was integrated into the project planning with the creation of compensation habitat, three lakes, to replace the disturbance created. Water use and replaced aquatic habitat are monitored to ensure performance measures are met, water use is within water license limits and cumulative withdrawals for all oil sands operations and is meeting habitat replacement requirements.



Financial planning	Yes, water-related issues are integrated	> 30	Water processing at oil sands mines requires tailings water storage for water recycling to minimize additional water withdrawals. Tailings water quality is managed with regard to the long-term plan to return the water to the Athabasca River, subject to meeting release requirements. Planning for the long-term management includes supporting innovation and technology such as water reduction through piloting the In Pit Extraction Process, improved water use efficiency in bitumen extraction and increased sediment removal from the tailings water through the injection of CO2 captured at our hydrogen plant into the tailings. These programs require timelines to develop the technology, conduct pilots and to commercial operations.
--------------------	--	------	---

W7.2

(W7.2) What is the trend in your organization’s water-related capital expenditure (CAPEX) and operating expenditure (OPEX) for the reporting year, and the anticipated trend for the next reporting year?

Row 1

Water-related CAPEX (+/- % change)

Anticipated forward trend for CAPEX (+/- % change)

Water-related OPEX (+/- % change)

Anticipated forward trend for OPEX (+/- % change)

Please explain

W7.3

(W7.3) Does your organization use scenario analysis to inform its business strategy?

	Use of scenario analysis	Comment
Row 1	Yes	Canadian Natural reviews independent external scenario analyses developed by energy firms representing a range of global oil and natural gas demand levels through to 2050. These analyses are used to support business planning and identification of risks & opportunities. We consider variables & assumptions related to markets, commodity prices, policy, regulation, tech development, energy efficiency and reputation, and incorporate assumptions for lower carbon emissions environments. This process has influenced our investments in projects, including the Water Technology Development Centre, designed to allow collaborative research that could reduce the cost of water recycling, improve the reliability and efficiency of recycling technology, and reduce the environmental footprint of facilities. Climate-related management of risks and opportunities is monitored every quarter, with risks assessed every 6 months or more frequently, considering risks that impact us as far as 6+ years out.

W7.3a

(W7.3a) Provide details of the scenario analysis, what water-related outcomes were identified, and how they have influenced your organization's business strategy.

	Type of scenario analysis used	Parameters, assumptions, analytical choices	Description of possible water-related outcomes	Influence on business strategy
Row 1	Climate-related	As part of evaluating climate change related risk and opportunities, Canadian Natural reviews independent external scenario analyses developed by energy firms and agencies representing a range of global oil and	The scenarios reviewed show that crude oil and natural gas remains an important part of the global energy mix for the foreseeable future along with providing an outlook on global GHG emission reduction. As the world	This process has influenced our investments in projects, including the Water Technology Development Centre, designed to allow collaborative research that could reduce the cost of water

		<p>natural gas demand levels through 2050. We have reviewed scenarios that model assumptions that are aligned with the commitment of the Paris Agreement.</p> <p>These external scenario analyses are a tool used to support business planning and identification of risks and opportunities. As part of this process, Canadian Natural considers a number of variables and assumptions related to markets (e.g., economic and social events), commodity prices, carbon prices, policy, regulation, technology development and adoption, energy efficiency and reputation.</p>	<p>evolves toward a lower carbon emissions energy system, we are proud to be one of the leading companies producing oil and gas while reducing our GHG emissions.</p> <p>Water-related risks due to climate are not anticipated to impact our business as <0.1% of our water use occurs in areas of moderate or higher water stress.</p>	<p>recycling, improve the reliability and efficiency of recycling technology, and reduce the environmental footprint of facilities.</p>
--	--	--	---	---

W7.4

(W7.4) Does your company use an internal price on water?

Row 1

Does your company use an internal price on water?

Yes

Please explain

Water availability is factored into projects in several ways, including long-term water availability and the systems to process and treat water, and for completion of reclamation at project closure. Internal pricing ensures that the liability of a project and its economics are for the full cycle of a project. Project costs are specific to water source used, its abundance, and its use. Options for water sources and their relative costs are considered, as is the environmental effects of choices like the use of saline water and water treatment compared to fresh water. For example, the Horizon oil sands mine included infrastructure requirements for water withdrawal from the Athabasca to avoid potential interruptions in water



availability under low flow events, the efficiency of water use to improve recycling and the return of water to the environment at the end of the project, including natural treatment processes in constructed wetlands and other treatment options.

W7.5

(W7.5) Do you classify any of your current products and/or services as low water impact?

	Products and/or services classified as low water impact	Please explain
Row 1	No, and we do not plan to address this within the next two years	<p>Canadian Natural's water management strategies focus on managing water use effectively and efficiently, while protecting water sources. They include:</p> <ul style="list-style-type: none"> • reducing fresh water use by maximizing produced water recycling and saline water use (saline water refers to non-potable water, not suitable for drinking or agricultural use without treatment); • applying technology and increasing efficiencies to conserve fresh water use; and • avoiding effects to water sources by following industry-leading operating practices and regulations, and minimizing water use, fresh water withdrawals and produced water disposal where possible. <p>While specific projects vary in their water management strategies to account for reservoir and technology requirements, all strategies are consistently applied across the Company and provide the foundation for our work.</p>

W8. Targets

W8.1

(W8.1) Describe your approach to setting and monitoring water-related targets and/or goals.

	Levels for targets and/or goals	Monitoring at corporate level	Approach to setting and monitoring targets and/or goals
Row 1	Business level specific targets and/or goals	Targets are monitored at the corporate level	<p>Canadian Natural sets targets to incent continuous improvement processes. Targets may be for specific operations such as water recycle rates for thermal projects, cumulative water withdrawal by all oil sands mining operations or benchmarking to industry standards for water efficiency use. Water recycle rates have shown steady improvement, achieving better than 80% in mining and 85% in thermal operations. Fresh water use for thermal and oil sands mining has declined, using more treated process water and saline water sources for thermal and efficiencies in mining operations has reduced water use intensity as well as increased water recycle. For in situ, Canadian Natural’s corporate target is a 40% reduction in fresh water intensity (m3 water/m3 bitumen) by 2026 compared to 2017 fresh water use. As of 2021, the in situ fresh water intensity has reduced by 57%. Canadian Natural’s oil sands mining target is a 40% reduction in fresh river water intensity (m3 water/m3 bitumen) by 2026 compared to 2017. As of 2021, we have reduced the mining fresh river water intensity by 48%. Canadian Natural measures water use in all operations, monitors recycle efficiency rates, discharge amounts and water return from thermal injection and in bitumen processing. Water use and recycle follows the hydraulic fracturing guiding principles and operating practices developed through CAPP, which in addition to disclosing all additives to water used in drilling the water sourcing, measurement and reuse is reported. Regulatory standards such as the Alberta Energy Regulator (AER) Directive 081 define water conservation and allocation requirements that Canadian Natural includes in project designs and operation.</p>

W8.1a

(W8.1a) Provide details of your water targets that are monitored at the corporate level, and the progress made.

Target reference number

Target 1

Category of target

Water use efficiency

Level

Country level

Primary motivation

Water stewardship

Description of target

For in situ, our corporate target is a 40% reduction in fresh water intensity (m³ water/m³ bitumen) by 2026 from 2017 levels. Our oil sands mining target is a 40% reduction in fresh river water intensity (m³ water/m³ bitumen) by 2026 from 2017 levels.

Quantitative metric

% increase in water use met through recycling/reuse

Baseline year

2017

Start year

2021

Target year

2026



% of target achieved

100

Please explain

Annual performance on target. Future annual water use intensity will fluctuate based on factors such as inter-annual and seasonal availability.

W9. Verification

W9.1

(W9.1) Do you verify any other water information reported in your CDP disclosure (not already covered by W5.1a)?

No, we do not currently verify any other water information reported in our CDP disclosure

W10. Sign off

W-FI

(W-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

W10.1

(W10.1) Provide details for the person that has signed off (approved) your CDP water response.

	Job title	Corresponding job category
Row 1	President	President



W10.2

(W10.2) Please indicate whether your organization agrees for CDP to transfer your publicly disclosed data on your impact and risk response strategies to the CEO Water Mandate’s Water Action Hub [applies only to W2.1a (response to impacts), W4.2 and W4.2a (response to risks)].

No

SW. Supply chain module

SW0.1

(SW0.1) What is your organization’s annual revenue for the reporting period?

	Annual revenue
Row 1	

SW1.1

(SW1.1) Could any of your facilities reported in W5.1 have an impact on a requesting CDP supply chain member?

SW1.2

(SW1.2) Are you able to provide geolocation data for your facilities?

	Are you able to provide geolocation data for your facilities?	Comment
Row 1		



SW2.1

(SW2.1) Please propose any mutually beneficial water-related projects you could collaborate on with specific CDP supply chain members.

SW2.2

(SW2.2) Have any water projects been implemented due to CDP supply chain member engagement?

SW3.1

(SW3.1) Provide any available water intensity values for your organization's products or services.

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I understand that my response will be shared with all requesting stakeholders	Response permission
Please select your submission options	Yes	Non-public

Please confirm below

I have read and accept the applicable Terms