

Welcome to your CDP Water Security Questionnaire 2023

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, 2022	December 31, 2022

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>
<p>Sufficient amounts of recycled, brackish and/or produced water available for use</p>	<p>Vital</p>	<p>Important</p>	<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	Frequency of measurement	Method of measurement	Please explain
Water withdrawals – total volumes	100%	Other, please specify Continuously or daily	Continuous flow metering or daily by volumetric calculation	Canadian Natural’s water withdrawal total volumes are measured and monitored and typically reported monthly and/or annually to regulatory agencies. We measure, monitor and report according to best practices and established regulatory standards.
Water withdrawals – volumes by source	100%	Other, please specify Continuously or daily	Continuous flow metering or daily by volumetric calculation	Canadian Natural’s water withdrawal total volumes by source are measured and monitored and typically reported monthly and/or annually to regulatory agencies. We measure, monitor and report from all sources according to best practices and established regulatory standards.
Produced water associated with your oil & gas sector activities - total volumes [only oil and gas sector]	100%	Continuously	Continuous flow metering	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.
Water withdrawals quality	76-99	Other, please specify Yearly or once prior to initial use (100%). In some cases periodically (e.g. annually) to	Sampled for lab testing.	Canadian Natural measures and monitors our surface water withdrawal quality aligned with operational parameters. We report measure

		understand quality of production fluid.		and monitor according to established best practices and regulatory standards.
Water discharges – total volumes	76-99	Continuously	Continuous flow metering or volumetric calculation	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.
Water discharges – volumes by destination	100%	Continuously	Continuous flow metering or volumetric calculation	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.
Water discharges – volumes by treatment method	100%	Continuously	Continuous flow metering	Canadian Natural measures and monitors all of our treated 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.
Water discharge quality – by standard effluent parameters	100%	Other, please specify At least once, as required for characterization prior to release.	Sampled for lab testing	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 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 – emissions to water (nitrates, phosphates, pesticides, and/or other priority substances)	Not relevant			We do not release solid, liquid or gaseous pollutants or contaminants, such as nitrates and pesticides to bodies of water. This water aspect is not expected to be relevant in the future.
Water discharge quality – temperature	100%	Other, please specify At least once, as required for characterization prior to release.	Temperature transmitters	Canadian Natural measures and monitors water discharge quality parameters required by regulation including temperature where required.
Water consumption – total volume	100%	Continuously	Calculated using withdrawal and discharge volumes	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.
Water recycled/reused	100%	Continuously	Continuous flow metering	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.
The provision of fully-functioning, safely managed WASH services to all workers	100%	Continuously	Fully functioning and safely managed potable water treatment and wash water services for all workers.	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.
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W1.2b

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

	Volume (megaliters/year)	Comparison with previous reporting year	Primary reason for comparison with previous reporting year	Five-year forecast	Primary reason for forecast	Please explain
Total withdrawals	86,742	Higher	Other, please specify Annual operational variance.	About the same	Other, please specify Current performance reflects improvements in water use in line with annual corporate target. Significant deviation is not anticipated .	Total withdrawals higher in 2022 due to annual operational variance.
Total discharges	15,963	Higher	Other, please specify Annual operational variance.	About the same	Other, please specify Current performance reflects improvements in water use in line with annual corporate target. Significant deviation is not anticipated .	Total discharges higher in 2022 due to annual operational variance.
Total consumption	70,806	Higher	Other, please specify Annual operational variance.	About the same	Other, please specify Current performance reflects improvements in water use in line with annual corporate target. Significant deviation is not anticipated .	Total consumption higher in 2022 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), how do they compare to the previous reporting year, and how are they forecasted to change?

	Volume (megaliters/year)	Comparison with previous reporting year	Primary reason for comparison with previous reporting year	Five-year forecast	Primary reason for forecast	Please explain
Total withdrawals - upstream	86,742	Higher	Other, please specify Annual operational variance.	About the same	Other, please specify Current performance reflects improvements in water use in line with annual corporate target. Significant deviation is not anticipated.	Total withdrawals - upstream higher in 2022 due to annual operational variance.
Total discharges – upstream	15,963	Higher	Other, please specify Annual operational variance.	About the same	Other, please specify Current performance reflects improvements in water use in line with annual corporate target. Significant deviation is not anticipated.	Total discharges - upstream higher in 2022 due to annual operational variance.
Total consumption – upstream	70,806	Higher	Other, please specify Annual operational variance.	About the same	Other, please specify Current performance reflects improvements in water use in line with annual corporate target. Significant deviation is not anticipated.	Total consumption - upstream higher in 2022 due to annual operational variance.

W1.2d

(W1.2d) Indicate whether water is withdrawn from areas with water stress, provide the proportion, how it compares with the previous reporting year, and how it is forecasted to change.



	Withdrawals are from areas with water stress	% withdrawn from areas with water stress	Comparison with previous reporting year	Primary reason for comparison with previous reporting year	Five-year forecast	Primary reason for forecast	Identification tool	Please explain
Row 1	Yes	Less than 1%	About the same	Other, please specify No change in geographic area or water stress anticipated.	About the same	Other, please specify No change in geographic area or water stress anticipated.	WWF Water Risk Filter	<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 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</p>

								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%).
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W1.2h

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

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Primary reason for comparison with previous reporting year	Please explain
Fresh surface water, including rainwater, water from wetlands, rivers, and lakes	Relevant	66,339	Higher	Other, please specify Annual operational variance.	Fresh river water use increased from 2021 to 2022 due to temporary operational constraints that reduced the water availability from the Horizon tailings pond for reuse in our operations and led to higher river water withdrawals. Constraints were resolved in 2022.
Brackish surface water/Seawater	Not relevant				Explanation of why water withdrawal from this particular source is not relevant: Canadian Natural does not conduct withdrawal from this source for in-scope activities.
Groundwater – renewable	Not relevant				Explanation of why water withdrawal from this particular source is not relevant: Canadian Natural

					does not conduct withdrawal from this source for in-scope activities.
Groundwater – non-renewable	Relevant	20,402	About the same	Other, please specify Withdrawals of groundwater about the same as the previous year.	Withdrawals of groundwater about the same as the previous year.
Produced/Entrained water	Not relevant				Explanation of why water withdrawal from this particular source is not relevant: Canadian Natural does not report produced water within CDP as it is predominantly recycled and would result in multiple counting.
Third party sources	Not relevant				Explanation of why water withdrawal from this particular source is not relevant: Canadian Natural does not conduct withdrawal from this source for in-scope activities.

W1.2i

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

	Relevance	Volume (megaliters/year)	Comparison with previous reporting year	Primary reason for comparison with previous reporting year	Please explain
Fresh surface water	Not relevant				Explanation of why discharges to destination not relevant: Canadian Natural does not discharge to this destination for in-scope activities.
Brackish surface water/seawater	Not relevant				Explanation of why discharges to destination not relevant: Canadian Natural does not discharge to this destination for in-scope activities.
Groundwater	Relevant	15,936	Higher	Other, please specify Annual operational variance.	Discharges to groundwater higher in 2022 due to annual operational variance.
Third-party destinations	Not relevant				Explanation of why discharges to destination not relevant: Canadian Natural does not discharge to this destination for in-scope activities.



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	Primary reason for comparison with previous reporting year	% of your sites/facilities/operations this volume applies to	Please explain
Tertiary treatment	Not relevant					The quality and destination of our discharges (groundwater) do not require tertiary treatment.
Secondary treatment	Not relevant					The quality and destination of our discharges (groundwater) do not require secondary treatment.
Primary treatment only	Relevant	8,967	Lower	Other, please specify Annual operational variance.	31-40	Rationale for the level of treatment applied: Treatment level provides a sufficiently clean feed water for steam generation in Steam Assisted Gravity-Drainage (SAGD) operations. Canadian Natural complies with provincial regulatory standards related to treatment and discharge within our SAGD operations.



Discharge to the natural environment without treatment	Relevant	6,969	This is our first year of measurement	Other, please specify Not previously reported.	61-70	<p>Rationale for the level of treatment applied: Applies where quality and destination of our discharges (groundwater) do not require treatment.</p> <p>Canadian Natural complies with provincial regulatory standards related to treatment and discharge within our non SAGD operations.</p>
Discharge to a third party without treatment	Not relevant					We do not discharge to third party sources.
Other	Not relevant					We do not discharge utilizing other treatment levels.



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	49,530,000,000	86,742	571,003.666044131	<p>We continuously look for ways to reduce fresh water use through best practices, innovation and shared results. Water withdrawal efficiency would be expected to improve even while annual operational variance may cause variations in performance trends year-to-year.</p> <p>When using revenue to calculate efficiency, the volatility of commodity markets is not taken into account and is therefore not an appropriate measure of water withdrawal efficiency for energy producers.</p>

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/denominator)

0.17

Numerator: water aspect

Other, please specify

Freshwater consumption (in situ production)

Denominator

Other, please specify

m3 of bitumen

Comparison with previous reporting year

Lower

Please explain

In our in situ operations, freshwater use intensity declined by 0.04 m3 water/m3 oil in 2022 compared to 2021. Through enhanced treatment methods for process water and a focus on using saline sources, our thermal in situ operations continue to reduce fresh water use intensity. Canadian Natural is on track to meet our 2026 fresh 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/denominator)

1.46

Numerator: water aspect

Other, please specify

Freshwater consumption (oil sands mining)

Denominator

Other, please specify

m3 of bitumen

Comparison with previous reporting year

Higher

Please explain

In our oil sands mining operations, our fresh river water use intensity increased in 2022 by 0.27 m³ water/m³ bitumen compared to 2021. Fresh river water use intensity increased from 2021 to 2022 due to temporary operational constraints that reduced the water availability from the Horizon tailings pond for reuse in our operations and led to higher river water withdrawals. Constraints were resolved in 2022 and we are targeting improved intensity for 2023. Canadian Natural is on track to meet our 2026 fresh river water intensity target of 40% reduction from 2017 baseline by 2026 and we continue to see an overall 36% reduction in river water use intensity from 2017.

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.

W1.4

(W1.4) Do any of your products contain substances classified as hazardous by a regulatory authority?

	Products contain hazardous substances
Row 1	Yes

W1.4a

(W1.4a) What percentage of your company’s revenue is associated with products containing substances classified as hazardous by a regulatory authority?

Regulatory classification of hazardous substances	% of revenue associated with products containing substances in this list	Please explain
List of substances (Canadian Environmental Protection Act)	More than 80%	Canadian Natural produces light, synthetic, and heavy crude oil and natural gas.



W1.5

(W1.5) Do you engage with your value chain on water-related issues?

	Engagement	Primary reason for no engagement	Please explain
Suppliers	Yes		
Other value chain partners (e.g., customers)	No	Judged to be unimportant	Engagement of other value chain partners on water-related issues is not currently considered to be of value.

W1.5a

(W1.5a) Do you assess your suppliers according to their impact on water security?

Row 1

Assessment of supplier impact

Yes, we assess the impact of our suppliers

Considered in assessment

Supplier impacts on water quality

Number of suppliers identified as having a substantive impact

210

% of total suppliers identified as having a substantive impact

1-25



Please explain

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

W1.5b

(W1.5b) Do your suppliers have to meet water-related requirements as part of your organization’s purchasing process?

	Suppliers have to meet specific water-related requirements
Row 1	Yes, water-related requirements are included in our supplier contracts

W1.5c

(W1.5c) Provide details of the water-related requirements that suppliers have to meet as part of your organization’s purchasing process, and the compliance measures in place.

Water-related requirement

Complying with a water-related certification

% of suppliers with a substantive impact required to comply with this water-related requirement

100%

% of suppliers with a substantive impact in compliance with this water-related requirement

76-99

Mechanisms for monitoring compliance with this water-related requirement

Supplier scorecard or rating



Response to supplier non-compliance with this water-related requirement

Retain and engage

Comment

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.

Water-related requirement

Providing fully-functioning, safely managed WASH services to all workers

% of suppliers with a substantive impact required to comply with this water-related requirement

100%

% of suppliers with a substantive impact in compliance with this water-related requirement

100%

Mechanisms for monitoring compliance with this water-related requirement

Supplier scorecard or rating

Response to supplier non-compliance with this water-related requirement

Retain and engage

Comment

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.

W1.5d

(W1.5d) Provide details of any other water-related supplier engagement activity.

Type of engagement

Information collection

Details of engagement

Collect water quality information at least annually from suppliers (e.g., discharge quality, pollution incidents, hazardous substances)

% of suppliers by number

1-25

% of suppliers with a substantive impact

100%

Rationale for 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.

Impact of the engagement and measures of success

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

Comment

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. We expect contractors to abide by environmental policies and procedures.



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?

	Water-related regulatory violations	Comment
Row 1	No	No fines, enforcement order and/or other penalties for water-related regulatory violations in the reporting year.

W3. Procedures

W3.1

(W3.1) Does your organization identify and classify potential water pollutants associated with its activities that could have a detrimental impact on water ecosystems or human health?

	Identification and classification of potential water pollutants	How potential water pollutants are identified and classified
Row 1	Yes, we identify and classify our potential water pollutants	Potential water pollutants are identified and classified via: <ul style="list-style-type: none"> • The Canadian National Pollutant Release Inventory • Alberta Environmental Quality Guidelines for Alberta Surface Waters



		<ul style="list-style-type: none"> • Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines • Alberta Environmental Protection and Enhancement Act • Canadian Ambient Air Quality Standards • The Canadian Association of Petroleum Producers Hydraulic Fracturing Guidelines <p>Canadian Natural policies and procedures in place to identify and classify potential water pollutants include our:</p> <ul style="list-style-type: none"> • Surface Water Management procedure • Surface Water Discharge procedure • Hydrogeological modelling and our Groundwater Sampling Procedure <p>Metrics and indicators used to identify pollutants include:</p> <ul style="list-style-type: none"> • Concentration and data trends for surface water quality parameters as identified through the resources above. • Concentration and data trends for groundwater quality parameters as identified through the resources above. • Concentration of emissions parameters as identified through the resources above. • Multiple additional metrics and indicators through regional environmental monitoring including water quality monitoring, ambient air and deposition monitoring, groundwater and wetlands monitoring by provincial and federal government agencies to ensure aquatic health standards are achieved.
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W3.1a

(W3.1a) Describe how your organization minimizes the adverse impacts of potential water pollutants on water ecosystems or human health associated with your activities.

Water pollutant category

Inorganic pollutants

Description of water pollutant and potential impacts

Potential impacts include surface water or groundwater contamination from spills, leaching, deposition through emissions or dust and mobilization through heating. The magnitude and extent of impact is dependent upon various factors, such as the size, location, concentration of the pollutant.

Value chain stage

Direct operations

Actions and procedures to minimize adverse impacts

Assessment of critical infrastructure and storage condition (leakages, spillages, pipe erosion etc.) and their resilience

Industrial and chemical accidents prevention, preparedness, and response

Water recycling

Discharge treatment using sector-specific processes to ensure compliance with regulatory requirements

Please explain

Our Environmental Management System includes multiple procedures to manage risk of potential impacts as described below.

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".

Potential groundwater pollutants are modelled using hydrogeological models and verified with groundwater sampling according to established government standards and our "Groundwater Sampling Procedure".

Emergency response plans are in place for all major facilities and regular preparedness drills are conducted regularly.

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. Success is measured through tracking results of our environmental monitoring programs which monitor either sources, pathways or receptors for all impacts.

Water pollutant category

Oil

Description of water pollutant and potential impacts

Potential upstream impacts includes potential for spills into water bodies near the operation where hydrocarbons are used and/or extracted/produced/refined. Potential downstream impacts include water contamination from equipment malfunction or underground storage of hydrocarbons. The extent and magnitude is dependent upon various factors, such as the size, location, concentration of the pollutant.

Value chain stage

Direct operations
Supply chain

Actions and procedures to minimize adverse impacts

Assessment of critical infrastructure and storage condition (leakages, spillages, pipe erosion etc.) and their resilience
Industrial and chemical accidents prevention, preparedness, and response
Water recycling
Requirement for suppliers to comply with regulatory requirements
Discharge treatment using sector-specific processes to ensure compliance with regulatory requirements

Please explain

Our Environmental Management System includes multiple procedures to manage risk of potential impacts as described below.

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".

Potential groundwater pollutants are modelled using hydrogeological models and verified with groundwater sampling according to established government standards and our "Groundwater Sampling Procedure".

Emergency response plans are in place for all major facilities and regular preparedness drills are conducted regularly.

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. Success is measured through tracking of spills which is evaluated as a corporate environmental performance metric.

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

Enterprise risk management

International methodologies and standards

Tools and methods used

Enterprise Risk Management

Environmental Impact Assessment

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
- Impact on human health
- Water regulatory frameworks
- Status of ecosystems and habitats
- Access to fully-functioning, safely managed WASH services for all employees

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

Enterprise risk management

Tools and methods used

Enterprise Risk Management

Contextual issues considered

Water regulatory frameworks

Access to fully-functioning, safely managed WASH services for all employees



Stakeholders considered

- Regulators
- Suppliers

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.

	Rationale for approach to risk assessment	Explanation of contextual issues considered	Explanation of stakeholders considered	Decision-making process for risk response
Row 1	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. For major projects, environmental impact assessments are completed to comprehensively review and identify risks. Using our contractor risk matrix and contractor screening tool (ComplyWorks) we assess company performance in our supply chain. ‘Partial’ is selected in supply chain as we do not identify all potential water-related risks within our supply chain.	Water availability and quality at a basin/catchment level is considered through involvement in regulatory management frameworks and processes such as the Lower Athabasca River Water Quantity and Quality Management Frameworks. Through such processes, monitoring is conducted by government agencies, industry and municipalities to ensure aquatic health standards are applied and to determine background conditions when assessing effects from facility operations. Also through these process, as well as through the environmental impact assessment process for major projects, potential stakeholder conflicts concerning water resources are identified and utilized in internal risk management. Impact to human health are also	Stakeholders are considered in the consequence classification stage of risk assessment. Stakeholder impacts originate from any potential issues related to water quality and quantity that may arise in operational areas where our business has dependency on water. Water quality and quantity impacts are identified at the environmental impacts assessment stage for major projects and within our operational areas. These impact assessments, policies and regulations consider, and in many cases directly include input from, local communities, NGOs, local utilities and regulators. Customer, suppliers, employees and investors are considered indirectly in the	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



		<p>factored into these processes. Access to fully-functioning, safely managed WASH services for all employees is an operational requirement.</p>	<p>impacts of these factors on our direct operations.</p>	<p>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.</p> <p>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.</p> <p>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.</p>
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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. Quantifiable indicators include financial and environmental effects. 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 our 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	1-25	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

1-25

% 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, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure - minimum (currency)

689,000,000

Potential financial impact figure - maximum (currency)

834,000,000

Explanation of financial impact

If Canadian Natural did not have 28 days of water storage on site, there would a potential financial impact on production for 28 days. Potential financial impact is calculated as 28 days production x daily assumed production rate of 230,000 bbl/d x average 2022 realized sales price (CAD\$117.69/bbl) with +/-10% for range.

Primary response to risk

Increase capital expenditure

Description of response

For example, in times of reduced water flows in the Athabasca River due to weather events, Canadian Natural may be further limited in the volume of water it is allowed to withdraw from the Athabasca under very low flow conditions. Water use efficiency has improved, reducing water demand allowing the license withdrawal limit to be reduced by approximately 30%. Lowering the limit on the amount of water available for our operations could result in reduced production at the Horizon Oil Sands Mining and Upgrading operations. We evaluated this risk and as a result, built additional 28-day water storage capacity at Horizon to allow for continued operations at normal production rates during periods of reduced flows in the Athabasca River.

\$9.4 million represents the capital spent to manage our risk through designing, hiring contractors to construct and then fill the water storage system at Horizon.

Cost of response

9,400,000

Explanation of cost of response

Infrastructure mitigates this risk. Cost of response is equal to the increased capital expenditure to construct 28 days of water storage.



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	<p>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.</p> <p>Voluntary relinquishment of a 22 million m3 water use licence at our Horizon operations in 2022 is an example illustrating that no substantive impacts are anticipated. This water licence represented 30% of our Horizon mine total water allocation and its relinquishment was enabled through integration of the Horizon South minable area into our existing Horizon development.</p>

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.

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 solution.

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

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 solution.

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)

4,641

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

4,641

Withdrawals from produced/entrained water

28,291

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

3,735

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

3,735

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

906

Comparison of total consumption with previous reporting year

Higher

Please explain

Consumption higher 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)

603

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

603

Withdrawals from produced/entrained water

10,962

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

794

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

794

Discharges to third party destinations

0



Total water consumption at this facility (megaliters/year)

-191

Comparison of total consumption with previous reporting year

About the same

Please explain

Negative consumption value results from recovery of reinjected recycled water which had been previously retained in the reservoir.

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)

979

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

979

Withdrawals from produced/entrained water

18,731

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

1,415

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

1,415

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

-436

Comparison of total consumption with previous reporting year

Lower

Please explain

Consumption lower due to annual operational variance. Negative consumption value results from recovery of reinjected recycled water which had been previously retained in the reservoir.

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)

1,051

Comparison of total withdrawals with previous reporting year

Lower

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

1,051

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

0

Withdrawals from produced/entrained water

1,556

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

1,556

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

1,556

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

-505

Comparison of total consumption with previous reporting year

Lower

Please explain

Consumption lower due to annual operational variance. Negative consumption value results from recovery of reinjected recycled water which had been previously retained in the reservoir.

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)

34,918

Comparison of total withdrawals with previous reporting year

Higher

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

26,879

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

8,039

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

2,955

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

2,955

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

31,963

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)

36,016

Comparison of total withdrawals with previous reporting year

Higher

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

35,762

Withdrawals from brackish surface water/seawater

0

Withdrawals from groundwater - renewable

0

Withdrawals from groundwater - non-renewable

254

Withdrawals from produced/entrained water

0

Withdrawals from third party sources

0

Total water discharges at this facility (megaliters/year)

510

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

510

Discharges to third party destinations

0

Total water consumption at this facility (megaliters/year)

35,252

Comparison of total consumption with previous reporting year

Higher

Please explain

Fresh river water use increased from 2021 to 2022 due to temporary operational constraints that reduced the water availability from the Horizon tailings pond for reuse in our operations and led to higher river water withdrawals. Constraints were resolved in 2022.

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

The large majority 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.

Water withdrawals – volume by source

% verified

76-100

Verification standard used

The large majority 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.

Water withdrawals – quality by standard water quality parameters

% verified

Not verified

Please explain

Water withdrawal quality does not typically require third party verification.

Water discharges – total volumes

% verified

76-100

Verification standard used

The large majority of groundwater discharge volumes are monitored and reported the Alberta Energy Regulator per appropriate directives describing various aspects of water management requirements. 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. Volumetric data are published on the Alberta Energy Regulator website.

Water discharges – volume by final treatment level

% verified

Not relevant

Please explain

Treatment prior to discharge is not relevant to our business.

Water discharges – quality by standard water quality parameters

% verified

76-100

Verification standard used

The large majority 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.

Water consumption – total volume

% verified

76-100

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.

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 Description of business impact on water Commitment to prevent, minimize, and control pollution Commitment to reduce water withdrawal and/or consumption volumes in direct operations Commitment to water stewardship and/or collective action Commitment to the conservation of freshwater ecosystems Reference to company water-related targets	Our 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 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.

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 or committee	Responsibilities for water-related issues
Director on board	<p>The Board of Directors (Board) 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 Board 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> <p>Within the last 2 years the Management Committee, which includes our Executive Chair and President, directed teams to establish new water targets for our oil sands mining and thermal operations.</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 Monitoring progress towards corporate targets Overseeing the setting of corporate targets 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 of 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.
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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

Water-related responsibilities of this position

Assessing water-related risks and opportunities

Managing water-related risks and opportunities

Setting water-related corporate targets

Monitoring progress against water-related corporate targets

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. The President also monitors progress against water-related targets.

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 spills, leaks and GHG Emissions Intensity (tonnes/BOE). The latter is relevant to water 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.

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	Contribution of incentives to the achievement of your organization's water commitments	Please explain
Monetary reward	Other C-suite Officer President	Reduction of water withdrawals – direct operations Improvements in water efficiency – direct operations Improvements in wastewater quality – direct operations	With the exception of Canadian Natural's Debt to Book metric, which has been established to reflect all commodity price cycles, we established 2022 performance targets as part of our 2022 budget guidance, which was released on January 11, 2021. The resulting performance measures are assigned weightings as indicated in the Performance Scorecard (available in our 2022 Management Information Circular) and the resulting overall score is utilized by	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



			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), leaks and spills in relation to production volume are metrics in the corporate Performance Scorecard on which performance bonuses are based.	managed effectively, we can lower the SOR and in turn, lower GHG emissions.
Non-monetary reward	No one is entitled to these incentives			Not applicable.

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, direct engagement with policy makers
- 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. We continually evaluate the progress of engagement activities to ensure that external policy discussions are consistent with our water strategies and commitments via continuous internal engagement at the working level with regularly updated tracking. Inconsistencies with our companies' strategy or commitments are identified for further working level action or are raised to senior management level, where appropriate.

We work together with industry organizations to establish common ground. We recognize participation comes with the understanding that we may not always support every position taken by these organizations or their members. 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.

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 fresh water withdrawals. Tailings water quality is managed with regard to a potential and long-term plan to return the water to the Athabasca River, subject to meeting release requirements set out by regulators. Planning for the long-term management includes supporting innovation and technology such as water reduction through technology projects such as the In Pit Extraction Process to improve 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.
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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)

0

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

0

Water-related OPEX (+/- % change)

0

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

0

Please explain

Investing in technology and innovation is part of Canadian Natural’s base business and is integrated into our projects, and therefore, our budgeting process. We do not budget for water-related projects separately.



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	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.	Although climate-related scenario analysis indicates no water-related risks, scenario analysis has influenced our operational and strategic response to the broader set of water-related risks and our



	<p>natural gas demand levels through 2050. We have reviewed scenarios that model assumptions, which are aligned with the commitment of the Paris Agreement, including the International Energy Agency's Net Zero Emissions by 2050 scenario and the UN's Sustainable Development Goal on climate action (SDG 13) that seeks to limit global warming to 1.5 °C above pre-industrial levels.</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 market events (e.g., economic, geopolitical, and social), commodity prices, carbon prices, policy, regulation, technology development and adoption, energy efficiency and reputation.</p>	<p>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 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>proactive investment in risk mitigation.</p> <p>This process has influenced our investments in projects such as 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.</p>
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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	Primary reason for not classifying any of your current products and/or services as low water impact	Please explain
Row 1	No, and we do not plan to address this within the next two years	Other, please specify We focus on effective and efficient water management.	Our water management strategies include: <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. 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.

W8. Targets

W8.1

(W8.1) Do you have any water-related targets?

Yes



W8.1a

(W8.1a) Indicate whether you have targets relating to water pollution, water withdrawals, WASH, or other water-related categories.

	Target set in this category	Please explain
Water pollution	No, and we do not plan to within the next two years	We do not set a target in the category of water pollution.
Water withdrawals	Yes	
Water, Sanitation, and Hygiene (WASH) services	No, and we do not plan to within the next two years	We do not set a target in the category of water, sanitation and hygiene (WASH) services.
Other	No, and we do not plan to within the next two years	We do not currently plan to set other water related targets.

W8.1b

(W8.1b) Provide details of your water-related targets and the progress made.

Target reference number

Target 1

Category of target

Water withdrawals

Target coverage

Business division

Quantitative metric

Reduction in withdrawals per unit of production



Year target was set

2021

Base year

2017

Base year figure

0.49

Target year

2026

Target year figure

0.29

Reporting year figure

0.17

% of target achieved relative to base year

160

Target status in reporting year

Underway

Please explain

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

Target reference number

Target 2



Category of target

Water withdrawals

Target coverage

Business division

Quantitative metric

Reduction in withdrawals per unit of production

Year target was set

2021

Base year

2017

Base year figure

2.29

Target year

2026

Target year figure

1.37

Reporting year figure

1.46

% of target achieved relative to base year

90.2173913043

Target status in reporting year

Underway



Please explain

Oil sands mining fresh river water use intensity. 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. Plastics

W10.1

(W10.1) Have you mapped where in your value chain plastics are used and/or produced?

	Plastics mapping	Please explain
Row 1		

W10.2

(W10.2) Across your value chain, have you assessed the potential environmental and human health impacts of your use and/or production of plastics?

	Impact assessment	Please explain
Row 1		



W10.3

(W10.3) Across your value chain, are you exposed to plastics-related risks with the potential to have a substantive financial or strategic impact on your business? If so, provide details.

	Risk exposure	Please explain
Row 1		

W10.4

(W10.4) Do you have plastics-related targets, and if so what type?

	Targets in place	Please explain
Row 1		

W10.5

(W10.5) Indicate whether your organization engages in the following activities.

	Activity applies	Comment
Production of plastic polymers		
Production of durable plastic components		
Production / commercialization of durable plastic goods (including mixed materials)		
Production / commercialization of plastic packaging		
Production of goods packaged in plastics		
Provision / commercialization of services or goods that use plastic packaging (e.g., retail and food services)		



W11. 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.

W11.1

(W11.1) Provide details for the person that has signed off (approved) your CDP water response.

	Job title	Corresponding job category
Row 1	President	President

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 indicate your consent for CDP to share contact details with the Pacific Institute to support content for its Water Action Hub website.

No

Please confirm below

I have read and accept the applicable Terms