

TSM Performance by Company

Canadian Natural Resources Limited



2017 was a year of transition for the Athabasca Oil Sands Project (AOSP). In 2016, Shell Canada Energy (Shell) operated the Muskeg River and Jackpine mines, located 75 kilometres north of Fort McMurray, Alberta, on behalf of the owners of the Athabasca Oil Sands Project (AOSP): Shell Canada Energy (60%), Chevron Canada Limited (20%) and Marathon Oil Canada Corporation (20%). In June 2017, Canadian Natural Resources Limited acquired 70% ownership of the AOSP, becoming operator of Albion Sands and its oil sands mines. The following is a summary of the former Shell oil sands mining operations' Towards Sustainable Mining (TSM) performance for 2016 and Canadian Natural will be reporting performance going forward.

INDIGENOUS COMMUNITIES

Shell has been working closely with Indigenous peoples in Canada for decades. Engagements include direct consultation on projects and operations, ongoing interaction and collaboration through industry relations committees, and formal engagement with Elders and First Nations and Métis leaders.

Shell greatly values the perspectives and input of Indigenous communities, and has successfully established agreements with several local First Nations and Métis groups. Shell also provides opportunities to qualified local businesses and residents, with an emphasis on ensuring Indigenous businesses are able to participate in the contracting and employment processes. Since 2005, the AOSP has invested nearly \$1.9 billion with more than 70 Indigenous-owned businesses and contractors that provide a broad array of products and services to Shell's operations.

The Canadian Council for Aboriginal Business has certified Shell for its work in Aboriginal relations across four areas: employment, business development, community investment, and community engagement. The certification provides high-level assurance from a jury of Aboriginal business people on corporate performance.

INVESTING IN THE COMMUNITY

Social investment is Shell's voluntary contribution to communities in Canada. The company seeks to initiate and support programs relevant to business activities and focuses social investment around science, education, innovation and business skills. In 2016, Shell made approximately \$2.2 million in contributions on behalf of the AOSP and in-situ operations. One example is Shell's long-term support for Indspire, an Indigenous-led charitable organization that invests in the education of Indigenous youth in Canada. Shell's partnership with Indspire began nearly 30 years ago with investments in Indigenous post-secondary education, and has since evolved into a 360-degree approach with investments in Kindergarten to Grade 12 programs, post-secondary scholarships and events that recognize Indigenous leaders.

ENVIRONMENTAL PERFORMANCE

Producing oil sands safely and in a manner that minimizes impact to the environment and society is of the utmost importance to Shell.

In 2004, the Muskeg River Mine was certified to the ISO 14001:2004 standard – the first oil sands operation in the world to attain this accreditation. This certificate was renewed in 2013, extending the scope to include the Jackpine Mine. The most recent ISO 14001:2004 surveillance audit was completed in February 2016. This ISO standard, though voluntary, is externally audited and is recognized as the top international standard for environmental management systems.

Shell is one of the founding members of Canada's Oil Sands Innovation Alliance (COSIA). COSIA is a first-of-its-kind alliance of oil sands producers that collaborate on innovation and technology to drive accelerated environmental performance improvement. Leveraging technical expertise globally within Shell and taking part in collaborative industry associations like COSIA help Shell identify and act on promising opportunities and conduct research, both cost effectively and efficiently.

Shell strives to reduce the GHG footprint of its oil sands operations. On a well-to-wheels basis, GHG emissions from oil sands crudes are greater than the average emissions of crudes refined in the United States, according to research by IHS Markit. However, the GHG intensity of Shell's oil sands operations has been improving for several years due to operational enhancements, and the successful operation of the Quest carbon capture and storage (CCS) project has improved Shell's performance even further.

Through operational excellence, Shell has improved approximately 3% each year over the past six years for a total 18% decline in GHG intensity. In 2016, Shell successfully completed a pilot program at its Shell Albian Sands site that avoids low quality, poor processing material, leading to improvements in energy efficiency and reduced emissions.

The Quest CCS project in Alberta was launched in 2015, and in 2016, it captured over one million tonnes of CO₂ from the Scotford Upgrader for storage deep underground – the equivalent to emissions from about 250,000 cars. Quest has a rigorous monitoring program to ensure that the CO₂ remains safely and securely in place. This includes continuous monitoring and early warning systems, groundwater sampling and 3-D seismic surveying.

By capturing one-third of direct CO₂ emissions from the Scotford Upgrader, Quest helps decrease the GHG intensity of Shell's operations. This brings Shell's oil sands products more in line with the average emissions of North American crude oil. Quest is the first CCS project in the oil sands and serves as a model for advancing and deploying more CCS facilities in other industrial settings worldwide.

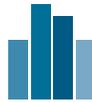
TSM PERFORMANCE

Shell maintains high standards in the TSM performance protocols of *Crisis Management and Communications Planning*, and *Aboriginal and Community Outreach*, with management programs in place that are reviewed, tested and documented. Shell informs stakeholders about its environmental performance through its annual Oil Sands Performance Report.

Shell's tailings management initiatives continued in 2016, focusing on advancing technologies to treat fluid fine tailings (FFT) to meet the Alberta Tailings Management Framework set in March 2015. In 2014, Shell completed a successful pilot of a tailings centrifuge, which advanced the units to be moved into commercial scale in 2015. Shell has invested approximately \$474 million since 2005 in research to develop technologies that speed up the drying or dewatering process for FFT. Shell continues to work towards improving tailings treatment technologies to treat FFT that have a high percentage of fine particles.

🔗 For more information, please visit www.shell.ca.





2016 TSM Results

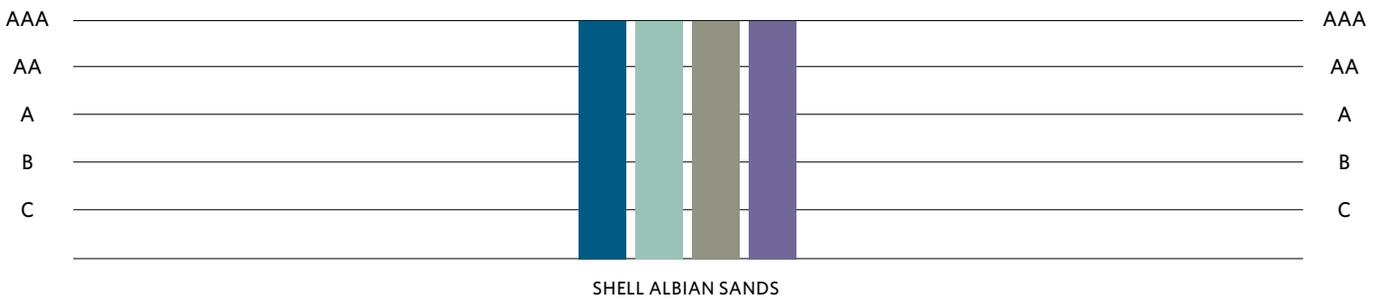
Canadian Natural Resources Limited

Crisis Management and Communications Planning Assessment

FACILITY	PREPAREDNESS	REVIEW	TRAINING
SHELL CANADA ENERGY	✓	✓	✓
SHELL ALBIAN SANDS	✓	✓	✓

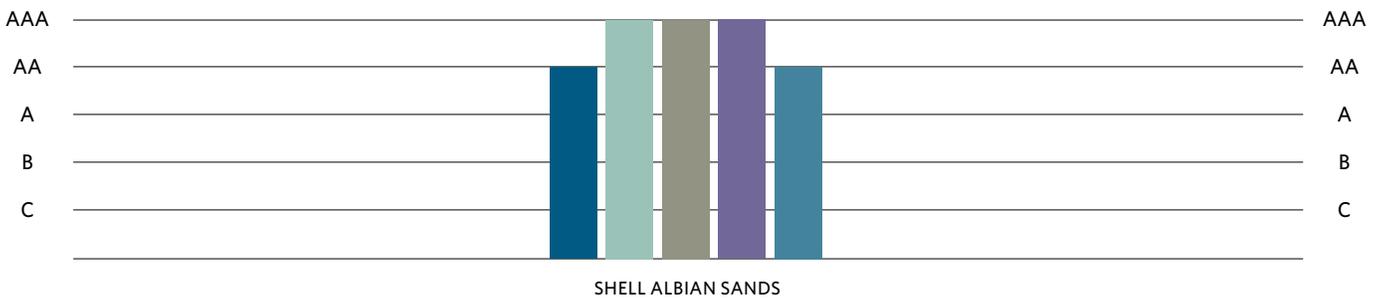
Aboriginal and Community Outreach Assessment

- COMMUNITY OF INTEREST (COI) IDENTIFICATION
- COI RESPONSE MECHANISM
- EFFECTIVE COI ENGAGEMENT AND DIALOGUE
- REPORTING



Safety and Health Assessment

- COMMITMENTS AND ACCOUNTABILITY
- TRAINING, BEHAVIOUR AND CULTURE
- PLANNING AND IMPLEMENTATION
- MONITORING AND REPORTING
- PERFORMANCE

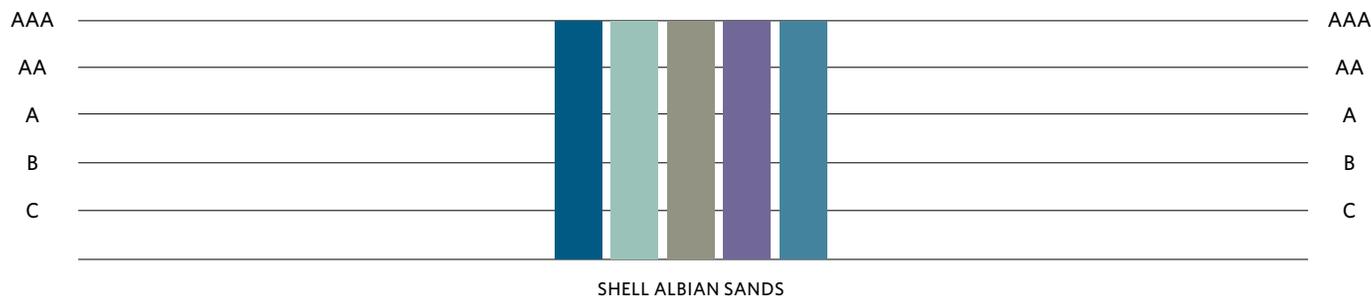


Self-assessed results; last external verification: 2016; next external verification: 2019.



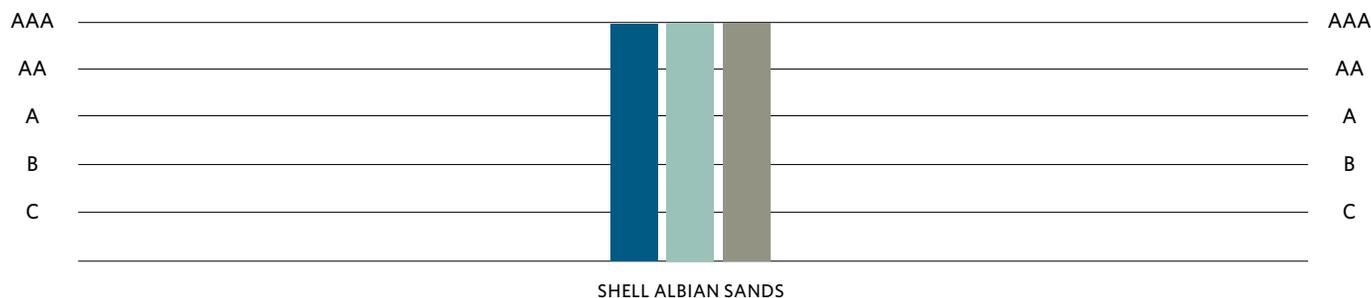
Tailings Management Assessment

- TAILINGS MANAGEMENT POLICY AND COMMITMENT
- TAILINGS MANAGEMENT SYSTEM
- ASSIGNED ACCOUNTABILITY AND RESPONSIBILITY FOR TAILINGS MANAGEMENT
- ANNUAL TAILINGS MANAGEMENT REVIEW
- OPERATION, MAINTENANCE AND SURVEILLANCE (OMS) MANUAL



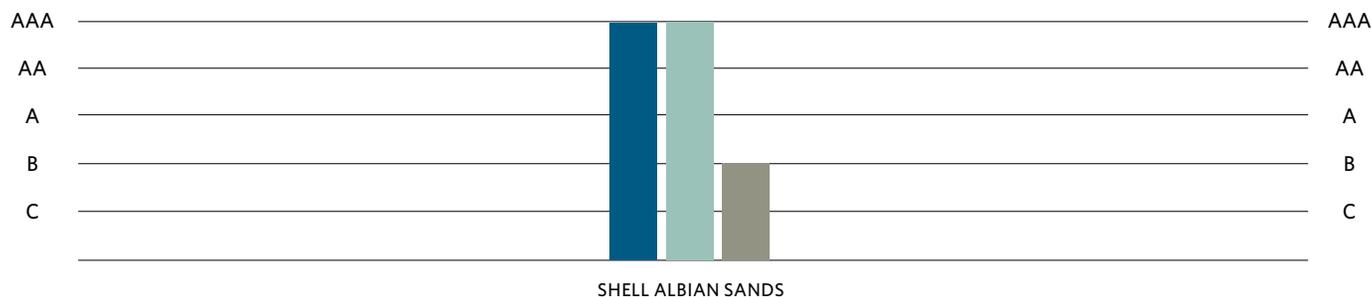
Biodiversity Conservation Management Assessment

- CORPORATE BIODIVERSITY CONSERVATION POLICY, ACCOUNTABILITY AND COMMUNICATIONS
- FACILITY-LEVEL BIODIVERSITY CONSERVATION PLANNING AND IMPLEMENTATION
- BIODIVERSITY CONSERVATION REPORTING



Energy Use and GHG Emissions Management Assessment

- ENERGY USE AND GHG EMISSIONS MANAGEMENT SYSTEMS
- ENERGY USE AND GHG EMISSIONS REPORTING SYSTEMS
- ENERGY AND GHG EMISSIONS PERFORMANCE TARGETS



Self-assessed results; last external verification: 2016; next external verification: 2019.

