ABOUT THIS REPORT

This report is Shell Canada’s sixth Oil Sands Performance Report and covers the areas of safety, environment, reclamation and community. This report provides information on Shell’s operating performance for 2014 for:

■ Muskeg River and Jackpine Mines;
■ Scotford Upgrader; and
■ Peace River and Clifdale In Situ operations

Unless otherwise noted, all data presented for the Muskeg River Mine, Jackpine Mine and Scotford Upgrader is in reference to total Athabasca Oil Sands Project (AOSP) performance before division amongst the joint venture owners. The AOSP is a joint venture operated by Shell, and owned among Shell Canada Energy (60%), Chevron Canada Limited (20%), and Marathon Oil Canada Corporation (20%). Data presented for in situ operations is 100% Shell share. All monetary amounts referred to in the report are in Canadian dollars unless otherwise noted.
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Thank you for taking time to read Shell Canada’s sixth consecutive update on safety, environmental and social performance in our oil sands operations.

We publish this update annually to share in more detail our efforts and progress in developing Alberta’s oil sands in an economically, socially and environmentally responsible way. This report is intended for those who have interest in our performance and a desire to better understand oil sands development and its strategic importance to Shell and to Canada.

Energy is vital to our modern way of life – it powers our mobility, keeps our showers hot and our emergency services, schools and hospitals running. At the same time, it’s important to recognize that there are more than 1.2 billion people globally who still lack basic access to modern energy. With global population projected to reach nine billion by 2050 the demand for energy to power those basics will only continue to grow.

Meeting the world’s energy needs in the face of this demand is a huge challenge; but so too is the need to address the real and growing threat posed by climate change.

Renewable energy will play an increasing role in the coming years. Even still, as we work towards a lower carbon future it will be necessary to rely on a variety of energy sources. This includes fossil fuels with technologies that reduce emissions such as carbon capture and storage (CCS).

Canada is home to the world’s third largest crude reserves, and as part of that Canada’s oil sands are a key resource for our province, our country, and the world. In addition to providing an important and stable energy resource, the industry is responsible for the direct and indirect employment of thousands of people across Canada. The oil sands industry has contributed billions in tax revenue; funding schools, hospitals, infrastructure and other critical services across the country.

Producing oil sands safely and in a manner that minimizes impact to our environment and society is of the utmost importance to Shell. Oil sands development is governed by comprehensive Federal and Provincial regulations which cover all aspects of air, water, land, wildlife and socio-economic impacts to the oil sands region and the wider environment. A 2014 study comparing leading oil and gas producing regions consistently ranked Alberta in the top three with regard to stringency of environmental policies and laws, compliance and transparency.

At Shell, we believe the long-term success of oil sands in the energy mix means being competitive both economically and environmentally.

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LORRAINE MITCHELMORE
Executive Vice President, Heavy Oil
President, Shell Canada
Currently some 228 projects at a cost of over $400M are in various stages of development, and to date COSIA member companies have shared some 777 technologies, valued at nearly $1 billion. Shell is leading or involved in 52 active projects, based on those that best fit with our operations and future business needs.

Shell Canada’s own internal Environmental Performance Improvement (EPI) program is structured to mirror the COSIA performance focus areas, and the delivery model is embedded within our daily ways of working. Since implementing EPI in 2012, we are working continuously to make progress against our own goals and aspirations in land (including tailings), water and air.

While ambitious, our aspirations challenge us to be creative and innovative in our problem-solving and disciplined in our execution. In some areas, progress will take more time and in other areas we are seeing positive performance trends.

Shell’s view is that climate change is one of the most pressing challenges our society faces today. While fossil fuels will remain the backbone of our energy supply for decades to come, clear and direct action must be taken to diversify the world’s energy supply, increase the use of cleaner fuels and improve efficiency.

From increasing energy efficiency in our operations to fuel technology advancements to educating customers on ways to consume fuel more efficiently, Shell is focused on reducing GHGs at all stages of the energy life cycle – from the mine to the motorist.

In 2015, Shell and the AOSP joint venture owners, Chevron and Marathon, with support from the Alberta and Canadian governments, expect to take a significant step toward direct GHG reduction from our oil sands operations with the start up of our Quest carbon capture and storage facility.

Quest is expected to capture approximately one million tonnes of CO\textsubscript{2} annually from our Scotford Upgrader and store it deep underground. Reducing our CO\textsubscript{2} emissions by a million tonnes is equivalent to taking 175,000 North American cars off the road each year.

The International Energy Agency has estimated that, if widely deployed, carbon capture and storage (CCS) could reduce global CO\textsubscript{2} emissions by around 15% by 2050.

Thank you for taking the time. We look forward to your feedback.
SAFETY

GOAL ZERO.
NO HARM.
NO LEAKS.

Shell’s Goal Zero imperative reflects our belief that we can operate safely without incidents despite the often difficult conditions in which we work. We continue to focus on key aspects of our safety culture, including training and coaching for leadership and staff and celebrating exemplary safety behaviours and achievements. For Shell, our primary consideration is for the health and safety of people and the environment, in all aspects of our operation.

VISIBLE SAFETY LEADERSHIP
– THE JOURNEY CONTINUES

Our focus on Visible Safety Leadership since 2012 continues to show benefit with steady improvement across our mining and upgrading operations and exemplary safety performance at our in situ operations. Late last year, the in situ team achieved a major milestone surpassing one million work hours without a recordable incident. Additionally, the mining operations team significantly reduced the number of recordable injuries, contributing to our overall improved safety performance for the year.

Leaders at all levels maintain high engagement in the field with their teams to ensure personal accountability and continuous improvement are at the heart of our safety culture.

Following the success of the 2013 Goal Zero Turnaround Initiative at the Scotford Upgrader, the implementation is expanding to include all staff and contractors on the Scotford site. This initiative has greatly increased collaboration among staff, union and non-union tradespersons.

Collaboration is critical to many initiatives at Scotford, including the ongoing effort to streamline and simplify some of our core safety rules and processes across the operating site.

As well, the mining operation is taking similar steps to include Scotford’s approach as part of its safety strategy. Strengthening the competence and confidence of our leadership, and in turn the rest of the organization, will continue to be a fundamental focus of our safety journey.

Late last year, the in situ team achieved a major milestone surpassing one million work hours without a recordable incident.
GOAL ZERO – NO HARM AND NO LEAKS

At Shell we recognize that the same behaviors supporting improved personal safety also contribute to improved process safety. Personal and process safety are inextricably linked, and Shell group emphasizes the mindset that Goal Zero means no injuries and no leaks. Using a “find small, fix small” approach, we are educating workers on how to prevent leaks and spills, and on the importance of treating every occurrence no matter how small, as a priority.

OUR 2014 SAFETY PERFORMANCE

Two key measures of safety performance are total recordable case frequency (TRCF) and lost-time injury frequency (LTIF). TRCF shows the rate of recordable injuries that required medical attention per one million hours worked by employees and contractors. In 2014, Shell Oil Sands Operations had 36 recordable injuries for a TRCF of 1.87, an improvement over 2013, which saw 49 recordable injuries and a TRCF of 2.51.

<table>
<thead>
<tr>
<th>SAFETY</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
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<tbody>
<tr>
<td>Exposure hours (millions)</td>
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<td>23.5</td>
<td>20.1</td>
<td>19.5</td>
<td>19.2</td>
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<tr>
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<td>60</td>
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<td>Total recordable case frequency</td>
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<td>1.80</td>
<td>3.00</td>
<td>2.51</td>
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<td>Lost-time injuries</td>
<td>8</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Lost time injury frequency</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.3</td>
<td>0.16</td>
</tr>
</tbody>
</table>

We can operate safely without incidents despite the often difficult conditions in which we work.
Canada’s oil sands are a secure, reliable source of energy for Canada and the world, and an economic engine which drives employment, training and business development across North America and beyond.

Oil sands are a mixture of sand, water, silt / clay particles, bitumen and other minerals. Bitumen is oil that is too heavy or thick to flow or be pumped without being diluted or heated. Some bitumen is found within 70 metres (200 feet) of the surface and can be extracted through mining. But most is deeper underground and is recovered using in situ production.

Canada’s oil sands are found in three deposits – the Athabasca, Peace River and Cold Lake areas in Alberta and part of Saskatchewan. The greatest quantity is found in the Athabasca deposit.

Shell’s oil sands interests include both mining and in situ operations. Mining and extraction operations at Muskeg River and Jackpine Mine, along with the Scotford Upgrader and Quest Carbon Capture and Storage project together make up the Athabasca Oil Sands Project (AOSP). Shell’s in situ operations are located in the Peace River area where we produce bitumen from the Peace River Complex using thermal recovery methods and from the Cliffdale Field using cold production techniques.

In 2014, Shell Canada sold its Orion in situ assets located near Cold Lake to Osum Oil Sands Corp.4

4 http://www.osumcorp.com/blog/2014/osum-acquires-orion-oil-sands-project/
The sand and water (tailings) are pumped to the tailings area where the mixture settles and water is recycled.

The remaining bitumen is mixed with diluent (a solvent) for easier transport to the Upgrader.

The diluted bitumen is sent via pipeline to the Scotford Upgrader located north east of Edmonton.

Here the bitumen is upgraded and blended into synthetic crudes for market.

Shell has developed a comprehensive measurement, monitoring and verification program (MMV) featuring multiple sophisticated monitoring technologies to verify that the CO$_2$ remains safely and permanently contained.

Synthetic crude oil from Alberta’s oil sands is refined into products such as diesel, gasoline, jet fuel and propane.

Some bitumen is found within 70 metres (200 feet) of the surface and can be extracted through mining.
OUR OIL SANDS OPERATIONS CONTINUED...

MINING

Shell uses large haul trucks and mechanical shovels to extract the oil sands mixture at its Muskeg River and Jackpine Mines, two adjacent open pit mines located north of Fort McMurray. These large trucks – which carry 400 tonnes per load – take the oil sands ore to crushers where it is prepared for bitumen extraction. The bitumen is separated from the sand and clay by adding warm water to create a slurry. The slurry is then separated; the bitumen is sent for further processing, while the remaining sand, clay water and trace bitumen is directed to tailings storage.

The intent is to recover as much of the bitumen as possible in accordance with regulated bitumen recovery levels defined by the Alberta Energy Regulator (AER) under Directive 082. Historically, Shell has had challenges at Muskeg River Mine in meeting bitumen recovery requirements. We take this very seriously and have been working diligently to implement actions designed to improve bitumen recovery.

As a result of our efforts, Shell received notification in March 2015 acknowledging it has demonstrated Directive 082 compliance to the satisfaction of the Regulator, and that the high-risk enforcement action issued in 2012 has been lifted.

In the past year, Shell completed two initiatives to help improve our recovery performance. First, we extended the Muskeg River Mine conditioning slurry line, which allows more time for the bitumen to separate in the warm water, improving the amount of bitumen recovered.

We also looked at the feasibility of increasing the temperature of the piping coming into the ore preparation area, which would warm the bitumen before separation begins and increase what is recovered during warm water extraction. We are now working to identify where the incremental temperature increases can be achieved through minor modifications and improvements to the unit. A further step in the future could include installation of new heat sources.

For Jackpine Mine, many of these improvements were identified and incorporated during construction and we achieved the regulator’s criteria for bitumen recovery on Jackpine Mine in 2012 and 2013. In 2015, we are piloting further approaches which we believe will help continue to improve our overall recovery performance.
SCOTFORD UPGRADE

Once separated, bitumen is diluted with solvent for piping to the Scotford Upgrader, where it is converted into synthetic crude oil that can then be refined into products like gasoline, diesel and jet fuel.

Located north east of Edmonton, the Upgrader processes bitumen mined from the Muskog River and Jackpine Mines by adding hydrogen in a process using heat and high pressure, to break up the large hydrocarbon molecules and create synthetic crude oil. This hydrogen-addition technology yields a slight volume gain during the upgrading process, which means the Upgrader yields about 103 barrels of synthetic crude from every 100 barrels of bitumen. The Upgrader is integrated with Shell’s wholly-owned Scotford Refinery, making it one of the most energy-efficient facilities of its kind.5

A significant portion of Shell’s share of synthetic crude from the Scotford Upgrader is sold to the Scotford Refinery, as well as Shell’s Sarnia Refinery in Ontario. The remainder is sold to the general market.

The Upgrader is also connected to Quest, our carbon capture and storage project.

CARBON CAPTURE AND STORAGE

To reduce CO₂ emissions from its Athabasca Oil Sands Project, Shell, on behalf of the AOSP joint venture owners and with the support of the Governments of Canada and Alberta, is constructing the Quest project – the world’s first commercial-scale carbon capture and storage project for an oil sands operation. (See page 17 for more information on Quest).

IN SITU

The 80% of Canada’s oil sands resources too deep to be mined may be recovered in place or ‘in situ’, by drilling wells. Shell’s oil sands in situ operations include two bitumen production facilities in the Peace River area.

The Peace River Complex uses enhanced oil recovery methods. This involves injecting steam into the reservoir to reduce the viscosity of the bitumen and allow it to be pumped to the surface. The Cliffdale Battery uses cold production, a process in which bitumen that has lower viscosities can be pumped to the surface without the use of steam.

Shell aims to be a leading operator in the Peace River region through focus on reliable operations and continuous improvement.

In 2013, Alberta’s Energy Regulator (AER) held an enquiry into odours from heavy oil operations in the Peace River region. Shell representatives participated in the enquiry and additionally made a submission outlining steps we have taken to reduce emissions from our operations, as well as our work with other operators and residents on air monitoring initiatives. The panel released its report with recommendations in March 2014. Most of the panel’s recommendations were reflective of practices already in use at Shell’s operations.

In line with our focus on responsible operations, Shell’s policy is to avoid continuous flaring or venting of hydrocarbons during routine operations. In 2012, Shell and Genalta Power had signed an agreement that enabled Genalta to use gas produced with the bitumen from Shell’s Cliffdale field to generate electricity. This not only offers an alternative to flaring the gas, it means a portion of our produced gas is used to power the region.

In 2014, Shell entered into a second agreement with Genalta Power to direct produced gas from cold production to Genalta to generate an additional 5MW of electricity. This means together Shell and Genalta are making use of gas that may otherwise be wasted to generate enough gas-fired electricity to power the equivalent of more than 10,000 homes in Alberta.

5 Biannually, refineries and upgraders submit data and the Solomon group ranks them against peers.
Shell announced its decision to proceed with the Carmon Creek project in 2013. This thermal in situ project is expected to produce 80,000 bpd of western Canadian crude oil. The project will use vertical steam drive technology to produce bitumen.

Our goal is to design and build a project that is competitive in Canada and globally from an economic, technological and environmental perspective. Shell has an overarching focus on reducing the impact of our projects.

ENHANCING SAFETY AND EFFICIENCY IN MODULE AND EQUIPMENT DELIVERY

Modularization is a common approach in heavy oil project construction. It involves building large components in fabrication yards offshore and then transporting and assembling them at site. This approach can be much more cost-efficient as it allows greater control over construction timing, quality and safety. Modules for the Carmon Creek Project are being pre-fabricated at locations within and outside Canada and transported to the site by rail and road.

Rail will be used to transport a large number of the modules into the Peace River region, which is more cost-efficient and reduces the numbers of trucks on the road, also reducing vehicle emissions.

Shell reached an agreement with a pulp mill in the Peace River region -- Daishowa-Marubeni International (DMI) -- to build a new access track from DMI’s rail spur track. Modules destined for the Carmon Creek site will be railed into the DMI site and loaded onto trucks to be transported the remaining short distance to site.

The agreement is a win-win for both companies as it makes use of an existing rail line to reduce heavy equipment traffic on highways in the region and enhances DMI’s ability to expand its future capabilities to meet regional needs.

DESIGNING THE PROJECT WITH EFFICIENCY IN MIND

Carmon Creek has been designed to be both energy and water efficient.

Co-generation produces both electricity and steam within a single facility from a single fuel (natural gas). Gas is converted to electricity within a gas turbine generator and the exhaust gas is further utilized to generate steam for the thermal extraction process. Making use of the waste from one process in the production of the other results in substantial gains in energy efficiency.
Our goal is to design and build a project that is competitive in Canada and globally from an economic, technological and environmental perspective.

The project will also treat the gas that is produced with the bitumen; the hydrogen sulfide (H2S), and some of the associated CO2, is removed and injected into a licensed deep disposal well. A significant portion of the clean, “treated” gas will then be used to generate steam on-site.

The co-generation units will produce enough power to provide for the operations, plus enough excess to power up to half a million homes. The excess power Shell generates through the co-generation units will have much lower carbon intensity than coal-fired power and will be sold back to the Alberta power grid, providing another revenue source for the project.

PROVIDING OPPORTUNITY FOR LOCAL COMMUNITY AND BUSINESS TO BENEFIT FROM THE PROJECT

At the outset of construction of the Carmon Creek Project, Shell hosted an open house designed to connect local contractors with Shell’s general works contractors. This continues to result in meaningful benefits for local companies and the broader Peace River business community.

To reduce impacts on local infrastructure and services, the project will accommodate workers from outside the local area using a camp located next to the worksite.

Bluesky Lodge is a 1,200 bed facility operated by ATCO in a joint-venture partnership (JV) with the Woodland Cree First Nation (WCFN). Established in 2010, this joint-venture partnership will support camp services for this project including camp management, catering, housekeeping and custodial services.

Shell has also been working closely with WCFN’s band-owned business, Woodland Cree Industries, to support their HSSE performance and provide earthworks contracting opportunities. This has resulted in direct community benefits for the First Nation and sustainable local employment for WCFN members.

Additionally, Shell has agreements in place with a number of local indigenous communities which include clearly defined consultation processes and commitments to invest in these communities.

INVESTING IN LOCAL COMMUNITY NEEDS

Since 2012, Shell has invested more than $2.1 million to support initiatives in the Peace River area and Shell employees have volunteered approximately 5,800 hours with more than 35 local organizations, including schools and sports teams.

In February 2015 Northern Lakes College officially opened the Shell Canada Power Engineering and Technology Centre, made possible through the help of a $500,000 donation from Shell.

Shell also provided $50,000 to facilitate planning and development of a new community daycare facility after a local daycare facility was lost in a fire.
POTENTIAL LONG-TERM GROWTH

JACKPINE MINE EXPANSION

Jackpine Mine Expansion (JPME) is an extension of our current Jackpine Mine that would enable an eventual production increase of up to 100,000 barrels per day (bpd). This allows flexibility in mine planning and makes use of existing processing facilities, while enabling more effective environmental management, particularly in land use, tailings management and reclamation.

Following a Decision Statement issued in December 2013 by the Federal Minister of the Environment enabling the project to proceed, the Athabasca Chipewyan First Nation (“ACFN”) filed a notice of application in January 2014 for Judicial Review of the Federal decision.

A Federal Court hearing took place in October 2014. In December 2014 the Court issued its ruling, finding that the Canadian Government had reasonably fulfilled its duties to consult and accommodate the ACFN, and ultimately dismissing the application for judicial review of the decision.

The extensive regulatory review and public hearing process for Jackpine Mine Expansion, ongoing since 2007, has enabled open and transparent discussion about the project. Consistent with our approach to responsibly developing our resources, Shell has welcomed input from many different groups and individuals to ensure the project will benefit local communities and the people of Alberta and Canada.

Proceeding with JPME is still subject to a final investment decision by the AOSP joint venture owners.

PIERRE RIVER MINE

Pierre River Mine (PRM) is a proposed mining development of up to 200,000bpd north of Fort McMurray. Shell filed the regulatory application in 2007 as part of a joint application with the Jackpine Mine Expansion.

With our current focus on maintaining a competitive business and successful delivery of near-term growth projects, early in 2015, Shell elected to withdraw its application from the regulatory process. Pierre River Mine remains an important long-term growth opportunity for Shell’s Heavy Oil business. We retain the leases and the option to submit a new regulatory application in future if desired.

Jackpine Mine Expansion (JPME) is an extension of our current Jackpine Mine that would enable an eventual production increase of up to 100,000 barrels per day (bpd).
ALBERTA, CANADA

- BOREAL FOREST
- MINERAL OIL SANDS
- ON STREAM
- OTHER LEASES

- ALBERTA
- EDMONTON
- PROPOSED PIERRE RIVER MINE
- MCCLELLAND LAKE
- JACKPINE MINE EXPANSION
- KEARL LAKE
- JACKPINE MINE
- MUSKEG RIVER MINE
- ATHABASCA RIVER
SHELL'S ENVIRONMENTAL STRATEGIES FOR OIL Sands

Shell established its Heavy Oil Environmental Performance Improvement (EPI) program in 2012. The program focuses on air, land (including tailings) and water, and is supported by a dedicated internal organization of environmental focal points for each area to support delivery.

We continue to make progress toward our long-term goals and aspirations through the work of our people, our ongoing participation in Canada’s Oil Sands Innovation Alliance (COSIA) and strategic initiatives focused on research and technology development.

COSIA's collaboration and best-practice sharing model will not only speed innovation, but will also reduce risk, replication of effort, cost and time. In an industry where the time to advance physical infrastructure and technology is often measured in decades, COSIA is harnessing the principles of collaboration to do things quicker and better. Shell and other alliance members are committed to ensure the continued momentum of COSIA projects.
As oil sands development has progressed, significant emissions reductions have been achieved, with industry-wide GHG emissions per barrel decreasing by 28% between 1990 and 2012.\(^6\) Shell is working to further reduce the GHG intensity of each barrel we produce. Oil sands are cited as Canada’s fastest growing source of GHG emissions, currently accounting for roughly 8.7%\(^7\) of Canada’s total Canadian GHG emissions. With projected future growth in mining and in situ oil sands development, there is a continued need for industry to collaborate and work toward further reductions in GHGs, particularly through COSIA.

Projects like Shell’s Quest carbon capture and storage project are also important to reducing GHGs here in Canada, as well as demonstrating the feasibility of CCS to encourage more rapid deployment globally.

Shell and other oil sands operators are working hard to reduce the GHG intensity of oil sands production over the long-term through the deployment of new technology.

On a wells-to-wheels basis—accounting for emissions produced during crude oil extraction, processing, distribution and combustion, including from upstream fuel consumed in crude production and processing facilities—GHG emissions from oil sands are about 4% to 23% higher than the average crude refined in the United States.

Shell continues to invest in technology development and knowledge sharing to identify promising opportunities. This includes leveraging the deep technical expertise within Shell globally, as well as collaborative industry initiatives like COSIA, to work on reducing GHGs in oil sands.

As we increase production, emissions from our operations also increase. We are focused on driving technology and innovation to improve energy efficiency and unlock new technologies that help us to bring down emissions over the long term in a sustainable way.

Our efforts to enhance reliable operations and ensure uninterrupted operation of processing units, outside of scheduled maintenance, are yielding good results.

Shell is working to further reduce the greenhouse gas (GHG) intensity of each barrel we produce.

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\(^6\) Environment Canada http://gowithcanada.ca/environment/44 (Accessed March 2014)

\(^7\) http://www.capp.ca/responsible-development/environment-and-climate/greenhouse-gas-emissions#TOC_1
### SHELL’S ENVIRONMENTAL STRATEGIES FOR OIL SANDS

#### AIR

<table>
<thead>
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<th>CO₂</th>
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<th>2012</th>
<th>2013</th>
<th>2014</th>
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<tr>
<td>OIL SANDS OPERATIONS (MRM, JPM, UPGRADER AND IN SITU)</td>
<td></td>
<td></td>
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<tr>
<td>Total direct emissions (Mt CO₂e)</td>
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<td>4.9</td>
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<td>1.9</td>
<td>1.7</td>
<td>1.9</td>
<td>1.6</td>
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<tr>
<td>Total emissions (Mt CO₂e)</td>
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<td>Total CO₂e intensity (kg CO₂e/bbl)</td>
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<td>86.2</td>
<td>82.2</td>
<td>80.9</td>
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<tr>
<td>Total direct emissions (Mt CO₂e) – In Situ</td>
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<td>0.58</td>
<td>0.56</td>
<td>0.57</td>
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<td>0.15</td>
<td>0.15</td>
<td>0.13</td>
<td>0.10</td>
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<td>Total direct emissions (Mt CO₂e) – Scotford Upgrader</td>
<td>1.82</td>
<td>2.85</td>
<td>2.98</td>
<td>3.25</td>
<td>3.42</td>
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<td>Energy Indirect Total GHG* (Mt CO₂e) – Scotford Upgrader</td>
<td>0.03</td>
<td>0.41</td>
<td>0.38</td>
<td>0.39</td>
<td>0.20**</td>
</tr>
<tr>
<td>Total direct emissions (Mt CO₂e) – JPM and MRM</td>
<td>1.01</td>
<td>1.44</td>
<td>1.73</td>
<td>1.48</td>
<td>1.52</td>
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<tr>
<td>Energy Indirect Total GHG (Mt CO₂e) – JPM and MRM</td>
<td>1.11</td>
<td>1.32</td>
<td>1.21</td>
<td>1.34</td>
<td>1.31</td>
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*Totals may not add due to rounding

*Energy Indirect Total GHG includes import electricity and steam/heat

**2014 Energy Indirect Total GHGs excludes indirect emissions from import hydrogen; previous years have not been recalculated

(Hydrogen imported for 2014 is 89,516 tonnes CO₂e)

#### COSIA PROJECT: CERAMIC MEMBRANES

Shell is exploring a potential pilot project to look at the use of ceramic membrane to recover hot or warm water from tailings before it is sent to tailings ponds. Recovering this heat and reusing it in the operation would reduce some need for additional heating equipment and would partially reduce the amount of land required to store water in tailings facilities.
MEASUREMENT MONITORING
AND VERIFICATION

Shell has conducted extensive subsurface work to confirm that the underground aquifer selected for CO$_2$ injection will safely and permanently contain the CO$_2$.

To supplement the multiple layers of protection already offered by the natural geological formations, Shell has developed a comprehensive measurement, monitoring and verification (MMV) program in accordance with the Alberta government’s regulatory requirements. This includes monitoring of wells at all different levels of the subsurface with specific focus on the three wells where the CO$_2$ will be injected and shallow groundwater wells located within about three kilometres of the injection wells. In 2011, international risk management firm Det Norske Veritas (DNV) awarded Quest the world’s first certificate of fitness for the safe permanent underground storage of CO$_2$.

A key aspect of the program is the monitoring that will occur below ground. This includes monitoring of wells at all different levels of the subsurface with specific focus on the injection well, where the CO$_2$ is being placed, and shallow groundwater wells located within about three kilometres of the injection wells. In 2011, international risk management firm Det Norske Veritas (DNV) awarded Quest the world’s first certificate of fitness for the safe permanent underground storage of CO$_2$.

A key aspect of the program is the monitoring that will occur below ground. This includes monitoring of wells at all different levels of the subsurface with specific focus on the injection well, where the CO$_2$ is being placed, and shallow groundwater wells located within about three kilometres of the injection wells. In 2011, international risk management firm Det Norske Veritas (DNV) awarded Quest the world’s first certificate of fitness for the safe permanent underground storage of CO$_2$.

Construction of Quest is complete and early commissioning and startup activities are underway. We are on schedule to begin safely storing CO$_2$ deep underground in 2015.
Canada’s oil sands lie under approximately 142,200km² of land. This equates to well under 1% of Canada’s boreal forest. Only about 3% of that land (or roughly 4,800km²) could potentially be impacted by mining operations, as the vast majority of oil sands deposits are too deep to mine and only recoverable through in situ methods, which cause less direct land disturbance.

While in situ development has lower direct land-disturbance than oil sands mining, there is still temporary impact from well pads, roads, and linear disturbance from exploration.

By law, oil sands operators must reclaim all lands disturbed by oil sands operations. Companies are required to develop a reclamation and closure plan that spans the life of the project. Full reclamation is a staged process and takes several decades to complete.

Shell is committed to starting large scale reclamation of our mining area within 20 years of first land disturbance.

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6 According to the Canadian Association of Petroleum Producers
LAND RECLAMATION

Oil sands operations have long life-spans, typically producing for over 40 years. During that time access to the land is required to mine the oil sands deposits and to accommodate associated infrastructure for hauling, extraction and processing. Before mining begins, we remove the material overlaying the oil sands deposits and store and preserve it until it is needed again for reclamation. This represents an impact to the ecological function of the land for a period of time and highlights the importance of reclamation in returning the lands to productive use.

Reclamation involves refilling the mined-out areas and re-establishing contours that fit within the natural landscape, then placing topsoil and planting suitable vegetation.

The land disturbed by our operations will be reclaimed to a condition that supports a self-sustaining, locally common boreal forest, as required by the Alberta government.

Although it will not be exactly the same as the previous landscape, the land will be able to support local plants and animals and a variety of land uses.

Full reclamation is a staged process which takes several decades to complete. Shell is committed to starting large scale reclamation of our mining area within 20 years of first land disturbance.

COSIA PROJECT:
GROSMONT LINEAR DISTURBANCE RE-VEGETATION

In 2014, Shell applied an innovative winter tree-planting technique developed by another COSIA member company to restore legacy disturbance* caused by exploration activities in the 1960s. (*Not related to Shell operations).

The area is located in the boreal forest within caribou range, where researchers believe linear corridors where trees have been cleared give predators increased access to caribou. In warmer months, the wet and spongy muskeg makes re-vegetation through typical tree-planting methods challenging. Using this innovative winter approach, Shell planted 15,000 trees restoring 19 hectares.

COSIA PROJECT:
PEATLAND RESTORATION

Shell is funding and participating in applied research conducted by Northern Alberta Institute of Technology (NAIT) Boreal Research Institute to investigate the best methods of reclaiming wellpads and roads in peatlands.

The current practice of reclaiming oil and gas sites in peatland areas is to leave the mineral or clay material used in wellpad and road construction in place and re-vegetate as grassy upland sites, however reclaiming to upland ecosystems does not restore the hydrological and peat-accumulating functions found in natural peatlands.

Shell is investing $1,000,000 over five years for peatland research and for the upland portion of the Boreal Forest Reclamation Project, in addition to $350,000 already invested over the past five years.

Shell was a key supporter of the NAIT New Boreal Research Institute, which opened in Peace River in 2014. The 9,000-square-foot facility includes two laboratories, office space for 15 people and a three-bay greenhouse. Before moving into the facility staff worked at three offices in Peace River and used greenhouses as far as 600 kilometres away.
Warm-water extraction is used to process oil sands ore and separate the sand from bitumen, which is a heavy oil. The term tailings refers to the remaining water, sand, silt, clay and residual hydrocarbons that remain once the bitumen is separated.

Tailings are integral to our operation; capturing them in storage ponds enables water recycling and reduces the amount of river water required in the production process. Some 80 per cent of the water used in Shell’s oil sands mining operations is recycled from the tailings facilities at our mines.

Tailings are initially stored in facilities constructed above ground. As mining progresses, tailings will be deposited into the mined out pit where they will continue to be used as part of the water recycling process. This in-pit backfilling process begins about 8-10 years after mining has started, when mining has progressed enough that containment can be built within the mined-out area. In-pit placement of tailings has already begun at Muskeg River Mine, where roughly 25% of the tailings “footprint” is in-pit tailings.
OIL SANDS ORE WARM WATER WATER AND SMALL PARTICLES TAILINGS SAND AND CLAY

SHELL TAILINGS OVERVIEW

IN-PIT TAILINGS PROCESS
Shovel and truck mining out the oil sands ore.

Advanced mining whereby a ‘dyke’ or containment wall could be built.

Containment wall being built to create a ‘cell’.

Tailings being deposited into a ‘cell’ while mining continues on the other side of the containment wall.

TAILINGS RECLAMATION OVERVIEW
Over time sand, silt and clay settle to the bottom of the pond.

Water is removed for use in the extraction process.

Overburden and top soil are replaced back into the tailings pond.

Native vegetation is reintroduced to the site.
We manage tailings carefully to minimize risks to wildlife and the surrounding environment. Residual bitumen floating on the surface is a risk to waterfowl if landing in a tailings facility. Tailings are monitored continuously and sophisticated bird-averting technology is used to discourage birds from landing there.

The tailings management areas at the Athabasca Oil Sands Project’s Muskeg River and Jackpine mines cover an area of 37 km$^2$ compared to 24 km$^2$ in 2013. This accounts for all areas in which tailings are managed, stored or treated. Most of the increase in 2014 is related to in-pit tailings deposits, as well as space dedicated to processing or drying of fluid tailings as part of our atmospheric fines drying process.

Between 2020 and 2025 the process to reclaim the external tailings facilities at Muskeg River Mine will begin, as more tailings materials are deposited in-pit as part of the in-pit backfilling process.

Alberta regulations require that land which is disturbed must be reclaimed - for example, through re-vegetation or reforestation - to a capability equivalent to what existed prior to development. Dried tailings can be blended and treated to produce material suitable for use in land reclamation.

While the sand in tailings settles easily and the water is consistently recycled, the tiny clay and silt particles called fines (also ‘fluid fine tailings’ or ‘FFT’) can take many years to settle, increasing the time required to reclaim tailings as well as the space needed to store them.

Several technologies are being explored and developed to treat FFT. Since 2005, Shell has invested $400 million in tailings research to develop technologies to speed up the drying process.

In 2014, Shell conducted a successful pilot of centrifuge technology, which uses centrifugal force to separate water from solids. By removing water, we can significantly reduce the space needed for drying and storing tailings material until it is needed for the reclamation process.

We continue to see success with Atmospheric Fines Drying (AFD), in which FFT is mixed with a polymer flocculent, similar to that used in municipal water treatment facilities to help settle out solids. The flocculent sticks to the clay particles causing them to bundle together and allowing the clay to be separated from the water. The thickened FFT is then deposited in thin layers on shallow slopes specifically constructed for drying and dewatering. The water is returned to the tailings facility where it can be recycled in the operation. The resulting dried material can be reclaimed in the same location or transported elsewhere for final reclamation.

The AFD process can reduce the time needed to dry tailings from years to weeks. Shell has implemented AFD at its Muskeg River Mine and to date has captured more than 4.0 million tonnes of dried fines.
COSIA PROJECT: CENTRIFUGE TECHNOLOGY

In 2014, Shell operated a pilot project testing two centrifuge units. Each centrifuge unit can treat about 1.0 million m$^3$ of FFT per year. Centrifuges use centrifugal force to separate tailings water and solids, enabling the water to be recycled and the solids to be stored for future use in stable reclamation landscapes.

Shell has been working on centrifuge technology since 2010. In 2012 through our participation in COSIA, we adopted a modular design and incorporated this into our pilot project. The modular design allows us to scale and move our centrifuge facility as required based on our operational needs.

The design and insights from the pilot study findings were instrumental in helping us implement faster than if we’d built it in place. Through our pilot work, Shell was able to further improve and reduce GHGs associated with the process. We are contributing these improvements back to COSIA for others to use and learn from.

Shell is in the final stages of commercial deployment and will increase to four centrifuge units in 2015.

COSIA PROJECT: END-PIT LAKES

Pit lakes are permanent water bodies that would be used in reclamation of FFT at the end of mine life. This passive treatment technology would involve placing a freshwater cap over FFT. While the FFT continues to settle over time, the intent is that the freshwater cap and vegetation would function as an ecologically sustainable water body. End pit lakes are included in the closure plans of many operators once mining is complete.

Oil sands operators are pursuing research to design pit lakes that are ecologically sustainable and geotechnically stable in the final reclaimed landscape.

Shell is leading a joint industry project on pit lakes in collaboration with six other COSIA member companies. The Demonstration Pit Lakes Project envisions a world-class demonstration-scale research facility on a mine site in northern Alberta. The facility would be used to study demonstration lakes and ponds of various sizes and depths with different contents, vegetation treatments and drainage approaches to determine ideal approaches and demonstrate the effectiveness of pit lakes as a reclamation feature. Through COSIA, Shell is studying another demonstration lake commissioned in 2012 by another oil sands operator to inform future work on the pilot.
### LAND

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<thead>
<tr>
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<tr>
<td><strong>MRM</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Total active footprint - mine + plant size (ha)</td>
<td>6,246</td>
<td>7,165</td>
<td>8,156</td>
<td>8,281</td>
<td>8,353</td>
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<tr>
<td>Permanent reclamation (ha) (cumulative)</td>
<td>16.0</td>
<td>12.0</td>
<td>38.7</td>
<td>166.1</td>
<td>166</td>
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<tr>
<td>Temporary reclamation (ha) (cumulative)</td>
<td>111.0</td>
<td>202.0</td>
<td>196.0</td>
<td>158.0</td>
<td>154.2</td>
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<tr>
<td><strong>JPM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total active footprint - mine + plant size (ha)</td>
<td>3,541</td>
<td>4,301</td>
<td>4,925</td>
<td>5,179</td>
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<tr>
<td>Permanent reclamation (ha) (cumulative)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Temporary reclamation (ha) (cumulative)</td>
<td>5.6</td>
<td>5.6</td>
<td>3.3</td>
<td>57.1</td>
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### TAILINGS

#### Annual Fluid Fines

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<tr>
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<tr>
<td><strong>MRM</strong></td>
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<td></td>
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<tr>
<td>Fluid fine tailings (millions m³)</td>
<td>3.7</td>
<td>6.0</td>
<td>8.7</td>
<td>8.3</td>
<td>NA*</td>
</tr>
<tr>
<td>Fines Capture (millions m³)</td>
<td>0.63</td>
<td>1.5</td>
<td>2.45</td>
<td>3.17</td>
<td>7.06**</td>
</tr>
<tr>
<td><strong>JPM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fluid fine tailings (millions m³)</td>
<td>0.85</td>
<td>4.9</td>
<td>4.14</td>
<td>3.59</td>
<td>NA*</td>
</tr>
<tr>
<td>Fines Capture (millions m³)</td>
<td>0.06</td>
<td>0.91</td>
<td>1.63</td>
<td>1.78</td>
<td>1.17</td>
</tr>
</tbody>
</table>

Fines capture figures reflect tailings fines materials that have been actively treated using a tailings technology.

* Following the release of the Tailings Management Framework and subsequent suspension of D74 by the Alberta Energy Regulator, new reporting parameters are expected to be released in 2015. Therefore, figure will be reflected in 2015 report.

** In 2014, Shell received credit for fines capture that was achieved in a previous year, but not previously credited.
Since it was established in 2009, Shell has struggled to meet the performance criteria requirements of Alberta Energy Regulator (AER) Directive 74, which governs oil sands tailings management. We continue working diligently to improve our performance in managing FFT and progressing to reclamation.

In March 2015, the Alberta government released the Tailings Management Framework (TMF)\(^\text{10}\), a new policy designed to ensure operators effectively manage the volume of fluid tailings over the life of a project and progress faster reclamation. Under the Framework, project-specific triggers and limits will be established for each operation to ensure fluid tailings are in a ready-to-reclaim state within 10 years of the end of mine life.

Under the new TMF, operators are expected to reclaim tailings in the way that works best based on the unique operating profile of each mine and will be accountable to their plans. The existing D74 has been suspended and it is expected it will be amended as part of the implementation of the new TMF.

Shell is supportive of the new TMF direction, as it allows flexibility in approach and selected technology. Ultimately we believe in the long-term this new Framework will ensure tailings are managed effectively and reclamation is achieved in an environmentally and economically efficient manner.

SHELL’S ENVIRONMENTAL STRATEGIES FOR OIL SANDS

WATER

The Alberta Government closely regulates water use across many industries, such as irrigation/agricultural, commercial, municipalities and cities, and the oil and gas industry. The oil sands industry represents about 8% of this total allocation\(^\text{10}\). On average, 80% of water is already recycled in Shell’s oil sands operations and we continue to look for ways to reduce the need for water from the Athabasca River in pursuit of our long-term aspiration.

Oil sands mining, in situ and upgrading operations require water for separating bitumen from sand, producing hydrogen and steam, and for cooling hydrocarbon streams. Shell recycles its water and continues to look for ways to optimize water usage. Independent and co-operative monitoring efforts by government, industry and stakeholder groups are also being enhanced.

In 2014, Shell used approximately 1.14 barrels of river water from the Athabasca River for every barrel of bitumen extracted from our mining operations. This was supplemented by groundwater, precipitation and connate water (water that forms part of the ore) as part of the water recycling process from tailings facilities. Our recycle rate is about 80% and no water used in our mining and extraction processes is returned back to the river.

In the winter months, Shell augments the flow in Jackpine Creek, a creek near the southern lease boundary with water sourced from the Athabasca River. This is part of Shell’s commitment to maintain the habitat in the creek during the low flow period of winter, as our mining operations reduce the natural inflow of water from aquifers to this creek.

In 2014, Shell implemented a project to reduce river water intake from the Athabasca River by converting pump seal water systems at Jackpine Mine to use reclaim water instead of river water. The project was installed in June 2014 and has performed successfully, such that we can reduce river water use by up to 3.0 million m$^3$ per year.

Before surface mining begins, areas must be prepped for mining activities by removing vegetation, salvaging soils for future reclamation, and dewatering the area. Natural ground water, which includes the surface water and shallow aquifer water within the overburden above the oil sands ore layer, is collected and discharged in accordance with the Shell’s mine operating approvals.

In late 2014, Shell filed an application for an amendment to our existing mine approvals, which would enable the return of additional groundwater that is found within and below the oil sands ore layer. Rather than direct this groundwater to our tailings holding area and combining it with water that is used in our process, we would instead discharge back to the natural environment. Discharging natural groundwater will ultimately help reduce the amount of water we store onsite, which helps reduce the volume of our tailings storage.

In 2010, we discovered saline water at the bottom of a section of a pit at the Muskeg River Mine. The water was confirmed to have originated from an aquifer below the mine pit. There has been no inflow from or outflow to the aquifer since January 2012. The water is contained in the pit where it is continuously monitored. To enable use of the area where the inflow occurred, plans to manage the saline water are in development, including consideration of long-term water treatment technologies.

OUR RECYCLE RATE IS ABOUT 80% AND NO WATER USED IN OUR MINING AND EXTRACTION PROCESSES IS RETURNED BACK TO THE RIVER.
WATER

SCOTFORD UPGRADE

In 2014, Shell consumed approximately 0.5 barrels of river water from the North Saskatchewan River for every barrel of bitumen that was upgraded, supplemented by water from precipitation and dewatering activities. About 90% of the waste water from the upgrading process is reused in operations, while the remaining is injected into deep wells. Treated water is returned to the river after testing the water quality to verify it meets Alberta Water Quality Standards.

At the Upgrader, we are progressing a project to construct a new interconnection between our cooling tower and wastewater treatment operations to allow water to be more efficiently used across the operation, which will help reduce our river water use. In 2014, we also identified and prioritized a number of water management initiatives that will help optimize water use and further reduce intake from the North Saskatchewan, which we will be progressing in 2015 and onwards.

IN SITU

In 2014, Shell’s in situ operations required an average of 1.6 barrels of water to produce one barrel of bitumen.

The water used to generate steam for in situ bitumen recovery can come from a number of sources. The Peace River Thermal Complex takes water from the Peace River to generate steam needed for its operation. For the Carmon Creek Project, the biggest source of water will be ‘produced water’, or the water that is co-produced with the bitumen. During operation, produced water will be recycled to create the steam needed for operations. On rare occasions when more water is required for steam generation than is available from produced water, the additional ‘make-up’ water will be sourced from an underground formation containing non-potable water (i.e. not suitable for human consumption or agricultural uses). It is expected a small amount of river water will be required for site operations that can’t use recycled water such as dust control, wash water or drilling water.

ABOUT 90% OF THE WASTE WATER FROM THE UPGRADE PROCESS IS REUSED IN OPERATIONS, WHILE THE REMAINING IS INJECTED INTO DEEP WELLS.

COSIA PROJECT: WATER TECHNOLOGY DEVELOPMENT CENTRE

Shell is one of six companies invested in a joint COSIA project to build a Water Technology Development Centre. The $165M facility will enable testing to speed development and commercialization of new water treatment technologies to reduce water use and increase water recycle rates, improving energy efficiency and reducing CO₂ emissions.
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<tr>
<td><strong>SCOTFORD UPGRAIDER</strong></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Total water use (million m³)</td>
<td>5.5</td>
<td>7.4</td>
<td>7.3</td>
<td>7.6</td>
<td>7.9</td>
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<tr>
<td>Net fresh water consumption (million m³)</td>
<td>3.4</td>
<td>4.8</td>
<td>5.6</td>
<td>5.4</td>
<td>6.0</td>
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<tr>
<td>Total effluent treated and returned to the river (million m³)</td>
<td>2.1</td>
<td>2.6</td>
<td>1.7</td>
<td>2.2</td>
<td>1.9</td>
</tr>
<tr>
<td>Percentage net fresh water consumption</td>
<td>57%</td>
<td>65%</td>
<td>76%</td>
<td>71%</td>
<td>76%</td>
</tr>
<tr>
<td>Fresh water intensity (bbl water consumed/bbl MRM and JPM bitumen)</td>
<td>0.46</td>
<td>0.42</td>
<td>0.45</td>
<td>0.42</td>
<td>0.45</td>
</tr>
<tr>
<td><strong>MRM AND JPM</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Water Intake (million m³) = Freshwater from the Athabasca + freshwater from other sources + recycled pond water - FAS*</td>
<td>79.8</td>
<td>130.9</td>
<td>143.1</td>
<td>140.6</td>
<td>150.4</td>
</tr>
<tr>
<td>Total Water Consumption (million m³) = (Freshwater from the Athabasca + freshwater from other sources + recycled pond water) - FAS</td>
<td>79.7</td>
<td>130.4</td>
<td>142.6</td>
<td>140.2</td>
<td>150.0</td>
</tr>
<tr>
<td>Mine Recycle Water Use (million m³)</td>
<td>54.1</td>
<td>101.9</td>
<td>117.5</td>
<td>105.7</td>
<td>117.5</td>
</tr>
<tr>
<td>Athabasca River Water Withdrawal (million m³), Includes FAS</td>
<td>17.6</td>
<td>23.5</td>
<td>15.1</td>
<td>16.0</td>
<td>15.5</td>
</tr>
<tr>
<td>Flow augmentation system – augmenting the flow in jackpine creek is a regulatory req in the winter months as we have mined the tributaries that feed into that creek</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Athabasca River Water Consumption (million m³), Minus FAS</td>
<td>17.5</td>
<td>23.0</td>
<td>14.6</td>
<td>15.6</td>
<td>14.7</td>
</tr>
<tr>
<td>Groundwater Consumption (million m³)</td>
<td>3.5</td>
<td>2.5</td>
<td>4.4</td>
<td>5.2</td>
<td>4.1</td>
</tr>
<tr>
<td>Surface Water Consumption (million m³)</td>
<td>4.5</td>
<td>2.9</td>
<td>6.1</td>
<td>13.7</td>
<td>13.3</td>
</tr>
<tr>
<td>Percentage Freshwater Consumed = (River water + GVW + SWV runoff - FAS) / Total water Consumption</td>
<td>32%</td>
<td>22%</td>
<td>18%</td>
<td>25%</td>
<td>22%</td>
</tr>
<tr>
<td>Percentage Recycled Water Pond = (Mine Recycled water use / Total Water Consumption)</td>
<td>68%</td>
<td>78%</td>
<td>82%</td>
<td>75%</td>
<td>78%</td>
</tr>
<tr>
<td>Percentage Athabasca River Water Consumed = (Athabasca Riverwater Consumption / Total Water consumption)</td>
<td>22%</td>
<td>18%</td>
<td>10%</td>
<td>11%</td>
<td>10%</td>
</tr>
<tr>
<td>Percentage Groundwater = (Groundwater consumption / Total water Consumption)</td>
<td>4%</td>
<td>2%</td>
<td>3%</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>Percentage Surface Water = (Surface water consumption / Total water Consumption)</td>
<td>6%</td>
<td>2%</td>
<td>4%</td>
<td>10%</td>
<td>9%</td>
</tr>
<tr>
<td>Athabasca River Water Intensity (bbl river water/bbl bitumen) = (Athabasca Riverwater consumed / bbl bitumen)</td>
<td>2.41</td>
<td>2.01</td>
<td>1.19</td>
<td>1.21</td>
<td>1.14</td>
</tr>
<tr>
<td><strong>IN SITU</strong></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Total Freshwater Consumption (million m³)</td>
<td>1.9</td>
<td>2.2</td>
<td>1.7</td>
<td>1.6</td>
<td>1.7</td>
</tr>
<tr>
<td>Freshwater Intensity (bbl water consumed/bbl in situ bitumen)</td>
<td>1.61</td>
<td>2.22</td>
<td>1.38</td>
<td>1.40</td>
<td>1.61</td>
</tr>
</tbody>
</table>

*The water data for the Muskeg River and Jackpine Mines is portrayed differently to reflect the distinction between water that we intake (which includes our flow augmentation system (FAS)) versus water we consume in our operations.
COMMUNITY

A GOOD WORKING RELATIONSHIP WITH LOCAL COMMUNITIES IS EXTREMELY IMPORTANT TO SHELL.

The average life cycle of an oil sands project is typically 40 years and we have a long-term interest in the communities in which we operate. We actively seek input from those who live near our facilities and from those who take an active interest in Shell’s oil sands business.

RELATIONSHIPS WITH INDIGENOUS PEOPLES

Shell has been working closely with Indigenous peoples in Canada for many years whether through direct consultation on projects and operations, ongoing interaction and collaboration through industry relations committees, or through formal engagement with Elders and Band Leaders. We are committed to working with communities affected by our projects and operations to mitigate our impacts and provide benefits to these communities. We value traditional environmental knowledge and incorporate these perspectives and input into our development.

Shell provides opportunities to qualified local businesses and residents, with emphasis on ensuring Indigenous businesses are able to participate in the contracting and employment processes.

Shell has been working on identifying entrepreneurs and helping them to grow their business, in order to increase capacity and encourage diversity. Shell also manages its largest non-Indigenous suppliers to ensure their own local content plans provide opportunities for Indigenous peoples and vendors.

Since 2005, the Athabasca Oil Sands Project has invested over $1.7 billion with more than 70 Indigenous-owned businesses and contractors that provide a broad range of products and services to our operations, ranging from general labour to technical roles.

Additionally, we have agreements in place with local Indigenous communities and have regular consultation meetings with local communities and stakeholders.

We have successfully established agreements with several local First Nations and Métis communities for both current operations and planned future developments.
Shell provides opportunities to qualified local businesses and residents, with emphasis on ensuring Indigenous businesses are able to participate in the contracting and employment processes.
Social Investment

Social investment is our voluntary contribution to communities in Canada. We seek to initiate, establish and support programs that are relevant to our business activities.

Our social investment activities are themed around science, education, innovation and business skills.

In 2014, Shell made around $3.6 million in contributions on behalf of the Athabasca Oil Sands Project and our in situ operations.

For over 26-years Shell has supported Indspire, an Indigenous-led registered charitable organization that invests in the education of Indigenous people for the long term benefit of these individuals, their families and communities, and Canada. Shell’s partnership with Indspire began with investments in Aboriginal post-secondary education, but today it has evolved into a 360-degree approach where we invest in kindergarten to Grade 12 programs, post-secondary scholarships and events that recognize Aboriginal leaders.

In 2014, Shell was proud to be the founding sponsor of Indspire’s Industry in the Classroom: Careers in Oil and Gas module. Over 26-years Shell has supported Indspire, an Indigenous-led registered charitable organization that invests in the education of Indigenous people for the long term benefit of these individuals, their families and communities, and Canada.
One of Shell’s goals is to help increase high school completion rates and boost the number of Aboriginal students pursuing post-secondary education.

In 2014, Shell was proud to be the founding sponsor of Indspire’s Industry in the Classroom: Careers in Oil and Gas module. The program is designed to increase the awareness of careers available in oil and gas, motivating and empowering Indigenous students to stay in school and plan for their futures.

The new module will be delivered in part by Shell Canada employees, who will visit classrooms in stakeholder Indigenous communities to talk to students about the careers available in oil and gas. All Shell Canada employees are eligible for this program after taking a half day ‘Train the trainer’ session as well as Aboriginal Awareness training.

### SOCIAL AND COMMUNITY INVESTMENT

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<th>SOCIAL INVESTMENT SPEND (MILLIONS $)</th>
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*Reflects only strategic social investment and does not include ad-hoc sponsorships and donations.*
In February 2015, Northern Lakes College officially opened the Shell Canada Power Engineering & Technology Centre, made possible through a $500,000 donation from Shell.

Shell Scotford helped fuel kindness with its second annual Community Appreciation Day. Employees performed random acts of kindness in the community, like delivering pizza lunches to local schools, helping to bag groceries in the supermarket, and surprising the local hospital with flowers for patients and staff.

For the first time ever, Shell’s United Way campaign reached the $1 million milestone through employee contributions and Shell corporate matching.
To commemorate the 10-year and 30-year operating milestones of the Scotford Upgrader and Refinery, respectively, Shell gave a total of $400,000 to be used for re-forestation and trail enhancements of West River’s Edge in Fort Saskatchewan, as well as the construction of the Fort Centre Park Wetlands.

Shell gave $500,000 toward development of the twelve bed facility that opened June 2014 and features a resident dining area, lounge, library & cultural activity area. The cultural activity area provides for the traditional needs of the residents and will have a significant inter-generational component with being open to the entire community.

The Community Crew helped out with a cleaning day at the Lamont County Hospital, not only cleaning up the hospital grounds, but also making a $36,000 donation to help the hospital install more solar panels. In 2013, Shell Scotford donated $50,000 toward the first set of solar panels, which help the hospital reduce its carbon footprint.

A world-class facility that will help meet a business and community need, the new 16,000 square foot facility features steam turbine generators, high-pressure boilers and turbine steam condensers like those found in an oil sands operating facility. The new lab enables the college to triple the number of students enrolled in the power and process engineering programs, helping industry meet the growing demand for new talent.

Shell gave $100,000 for the Fort McKay Safety Program. With over 700 community members, the people of Fort McKay will have access to outreach activities and training that build safety awareness. The intent is to address unsafe practices with the goal of fostering a culture of continuous improvement. Community focus groups were held to identify the safety concerns, prioritize them and suggest solutions. A Community Advisory Committee has been established which meets monthly to support community safety activities.
ENVIRONMENTAL COLLABORATION
AND EXTERNAL CERTIFICATION

SHELL PARTICIPATES IN VARIOUS ASSOCIATIONS, INCLUDING THE FOLLOWING:

**Alberta Environmental Monitoring, Evaluation and Reporting Agency**
www.aemera.org

The Alberta Environmental Monitoring, Evaluation and Reporting Agency (AEMERA) is the provincial organization established to monitor, evaluate and report on key air, water, land and biodiversity indicators to better inform decision-making by policy makers, regulators, planners, researchers, communities, industries and the public.

AEMERA’s mandate is to provide open and transparent access to scientific data and information on the condition of Alberta’s environment, including specific indicators as well as cumulative effects, both provincially and in specific locations.

**Three Creeks Multi-Stakeholder Air Monitoring Subcommittee**

This group supports collection of air quality data and provides input into decision making about air quality management in the Three Creeks Area. The sub-committee includes representatives such as Three Creeks local residents, AESRD, Northern Sunrise County, AER, Alberta Environmental Monitoring, Evaluation and Reporting Agency (AEMERA), and local industry.

**Oil Sands Community Alliance**
www.oscaalberta.ca

The Oil Sands Community Alliance (OSCA) has the mandate to pursue innovative solutions to build thriving communities and enable the responsible growth of Canada’s oil sands. The OSCA is focused on four core areas: aboriginal, community well-being, infrastructure and workforce. Within these committees, key issues will be prioritized through baseline research and stakeholder consultation.

**The Cumulative Environmental Management Association**
www.cemaonline.ca

The Cumulative Environmental Management Association (CEMA) is the leading multi-stakeholder group operating in the heart of Canada’s Boreal Forest – the Regional Municipality of Wood Buffalo, Alberta. CEMA is a key advisor to the provincial and federal governments committed to respectful, inclusive dialogue to make recommendations to manage the cumulative environmental effects of regional development on air, land, water and biodiversity.

**The Wood Buffalo Environment Association**
www.wbea.org

The Wood Buffalo Environmental Association (WBEA) monitors the air in the Regional Municipality of Wood Buffalo, 24 hours a day, 365 days a year. This is done through a variety of air, land and human monitoring programs. The information collected is openly shared with stakeholders and the public.

**The Canadian Association of Petroleum Producers (CAPP)**
www.CAPP.ca

The Canadian Association of Petroleum Producers (CAPP) represents companies, large and small, that explore for, develop and produce natural gas and crude oil throughout Canada. CAPP’s member companies produce about 90% of Canada’s natural gas and crude oil. CAPP’s associate members provide a wide range of services that support the upstream crude oil and natural gas industry. Together CAPP’s members and associate members are an important part of a national industry with revenues of about $100 billion/year. CAPP facilitates continued improvement in environment, health and safety performance and stewardship while maintaining a viable industry.
Canada’s Oil Sands Innovation Alliance (COSIA)

www.cosia.ca

Canada’s Oil Sands Innovation Alliance (COSIA) is an alliance of oil sands producers focused on accelerating the pace of improvement in environmental performance in Canada’s oil sands through collaborative action and innovation. COSIA formed in 2012 and has 13 member companies, representing about 90% of the production in Canada’s oil sands.

Joint Oil Sands Monitoring (JOSM)

www.jointoilsandsmonitoring.ca

The Governments of Alberta and Canada will manage and operate JOSM. JOSM builds on a foundation of monitoring that is already in place, and is intended to enhance existing province wide environmental monitoring system activities focused on evaluating regional cumulative effects associated with oil sands development. Shell also participates in multi-stakeholder technical Component Advisory Committees led by JOSM including air, water, wildlife contaminants and biodiversity.

The Mining Association of Canada ‘Towards Sustainable Mining’ initiative

www.mining.ca

In 2013, during the external verification process, Shell’s oil sands mining operations achieved AAA ranking (meaning Excellence and Leadership) across all categories in “Aboriginal and Community Outreach”, “Energy Use and GHG Emissions Management” and “Tailings Management”. In all other categories of Biodiversity, Crisis Management, and Health & Safety, we ranked at A or higher, with the exception of one B in Health & Safety. Our next external verification will occur in 2016.

The Integrated CO₂ Network (ICO2N)

Shell is part of the Integrated CO₂ Network (ICO2N), a coalition of Canadian companies committed to the development of carbon capture and storage in Canada.

ISO 14001

www.iso.org

ISO 14001 is an international, externally verified standard for environmental management systems (EMS). Registration demonstrates that an organization has a sound environmental policy and an effective EMS to support that policy. In 2004 the EMS at Shell’s oil sands mining operations was the first oil sands mining operation to be certified to the ISO 14001 standard. Although it does not set standards for actual environmental performance, ISO 14001 includes a commitment to continuous improvement in environmental performance, complying with environmental legislation and protecting the environment.
Athabasca Oil Sands Project (AOSP)
A joint venture among Shell Canada Limited (Operator and 60% owner), Chevron Canada Limited (20%) and Marathon Oil Canada Corporation (20%), the AOSP consists of the Muskeg River and Jackpine Mines located north of Fort McMurray, Alberta and the Scotford Upgrader and Quest carbon capture and storage project, located near Edmonton, Alberta.

Bitumen
A thick hydrocarbon, referred to as heavy oil.

CO₂e
Carbon dioxide equivalent. The 100-year time horizon global warming potential of a specified gas expressed in terms of equivalency to CO₂. (Source: Specified Gas Emitters Regulation)

Cogeneration
Combined production of heat for use in industrial facilities and the production of electricity as a byproduct. (Source: Specified Gas Emitters Regulation)

Connate Water
Molecules of oil sands ore contain water, which is released when the bitumen is separated from the sand.

Cold Production
An in situ production technique used when the bitumen is less viscous and does not require heating to make it fluid enough to be pumped to the surface.

Direct Emissions
The release of specified gases from sources under the direct control of the operating facility expressed in tonnes CO₂e.

Effluent
Wastewater (treated or untreated) that flows out of a treatment plant, sewer, or industrial facility. (Source: Environment Canada)

Emissions Intensity
The quantity of specified gases released by a facility per unit of production from that facility.

Emission Offset
A reduction in one or more specified gases (regulated greenhouse gas emissions) occurring at sites not covered by the Specified Gas Emitters Regulation. (Source: Specified Gas Emitters Regulation)

Emission Performance Credit (EPCS)
Generated when a facility reduces its Net Emissions Intensity below its Net Emissions Intensity Limit. EPCs are awarded on a tonne CO₂e reduction basis. (Source: Specified Gas Emitters Regulation)

Greenhouse Gas (GHG)
Mainly, carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), all of which contribute to the warming of the Earth’s atmosphere. (Source: Government of Alberta, Department of Energy)

ha
Hectare. A unit of surface area equal to a square that is 100 metres on each side.

Indirect Emissions
Emissions that are a consequence of the activities of the reporting entity, but occur at sources owned or controlled by another entity.

In Situ
Refers to various methods used to recover deeply buried bitumen deposits, including steam injection, solvent injection, electrical heating and cold production.

JPM
Jackpine Mine.

Km²
Square kilometre. A unit of surface area equal to a square that is one kilometre on each side.

Lost-Time Injury Frequency
Refers to the rate of recordable injuries requiring time off work per one million exposure hours worked.

MRM
Muskeg River Mine.

m³
Cubic metre. A unit of volume or capacity equal to 1000 litres.

Mt (Megatonne)
Megatonne. A unit of mass equal to one million tonnes.

Reclamation
Returning disturbed land to a land capability equivalent to what it was prior to disturbance. Reclaimed property is returned to the Province of Alberta at the end of operations.

Certified Reclamation
Reclaimed areas for which a certificate has been issued under the terms of the Alberta Environmental Protection and Enhancement Act (EPEA), signifying that the terms and conditions of the EPEA approval have been complied with and the lease is returned to the Crown.

Seepage
The slow movement of water or other fluids through a process medium, or through small openings in the surface of unsaturated soil.

Synthetic Crude Oil
A mixture of hydrocarbons, similar to crude oil, derived by upgrading bitumen from oil sands.

Tailings
The residual by-product that remains after the bitumen is separated from the mined oil sands ore; tailings are composed of water, sand, clay, heavy metals and residual bitumen.

Thermal Production
A bitumen recovery technique that includes injecting high-pressure steam underground to mobilize the bitumen, which is then pumped to the surface, leaving the sand in place.

Total GHG Emissions
Includes GHG emissions from direct and indirect sources.

Total Recordable Case Frequency
Refers to the rate of recordable injuries that required medical attention per one million exposure hours worked.
APPENDIX

Overall
Data cited in this report has been confirmed as of March 2015. If substantial data changes occur after preparation of this report, they will be updated in next year’s publication.

CO₂
Total CO₂e intensity is calculated on the basis of operational emissions. CO₂ intensity including offsets – this data is intended to show the efforts we are making to offset the impact of emissions from our operations and does not suggest a physical reduction in overall emissions or emissions intensity.

Social Investment
Shell’s social investment spend does not include funding provided by Shell to Aboriginal neighbours as part of sustainability agreements or the value of local contracting agreements.

CAUTIONARY NOTE

The companies in which Royal Dutch Shell plc directly and indirectly owns investments are separate entities. In this report “Shell group” and “Royal Dutch Shell” are sometimes used for convenience where references are made to Royal Dutch Shell plc and its subsidiaries in general. In this report all references to “Shell” refer specifically to Shell’s oil sands businesses in Canada. Likewise, the words “we”, “us” and “our” are also used to refer to Shell’s oil sands business in Canada in general or to those who work for them. These expressions are also used where no useful purpose is served by identifying the particular company or companies. “Subsidiaries”, “Shell subsidiaries” and “Shell companies” as used in this report refer to companies over which Royal Dutch Shell plc either directly or indirectly has control.

Companies over which Shell has joint control are generally referred to as “joint ventures” and companies over which Shell has significant influence but neither control nor joint control are referred to as “associates”. In this report, joint ventures and associates may also be referred to as “equity accounted investments”. The term “Shell interest” is used for convenience to indicate the direct and/or indirect ownership interest held by Royal Dutch Shell in a venture, partnership or company, after exclusion of all third-party interest.

This report contains forward-looking statements concerning the financial condition, results of operations and businesses of Royal Dutch Shell. All statements other than statements of historical fact are, or may be deemed to be, forward-looking statements. Forward-looking statements are statements of future expectations that are based on management’s current expectations and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in these statements. Forward-looking statements include, among other things, statements concerning the potential exposure of Royal Dutch Shell to market risks and statements expressing management’s expectations, beliefs, estimates, forecasts, projections and assumptions. These forward-looking statements are identified by their use of terms and phrases such as “anticipate”, “believe”, “could”, “estimate”, “expect”, “goals”, “intend”, “may”, “objectives”, “outlook”, “plan”, “probably”, “project”, “risks”, “schedule”, “seek”, “should”, “target”, “will” and similar terms and phrases. There are a number of factors that could affect the future operations of Royal Dutch Shell and could cause those results to differ materially from those expressed in the forward-looking statements included in this report, including (without limitation): (a) price fluctuations in crude oil and natural gas; (b) changes in demand for Shell’s products; (c) currency fluctuations; (d) drilling and production results; (e) reserves estimates; (f) loss of market share and industry competition; (g) environmental and physical risks; (h) risks associated with the identification of suitable potential acquisition properties and targets, and successful negotiation and completion of such transactions; (i) the risk of doing business in developing countries and countries subject to international sanctions; (j) legislative, fiscal and regulatory developments including regulatory measures addressing climate change; (k) economic and financial market conditions in various countries and regions; (l) political risks, including the risks of expropriation and renegotiation of the terms of contracts with governmental entities, delays or advancements in the approval of projects and delays in the reimbursement for shared costs; and (m) changes in trading conditions. All forward-looking statements contained in this report are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. Readers should not place undue reliance on forward-looking statements. Additional risk factors that may affect future results are contained in Royal Dutch Shell’s 20-F for the year ended December 31, 2014 (available at www.shell.com/investor and www.sec.gov). These risk factors also expressly qualify all forward-looking statements contained in this report and should be considered by the reader. Each forward-looking statement speaks only as of the date of this report, April 13, 2015.

Neither Royal Dutch Shell plc nor any of its subsidiaries undertake any obligation to publicly update or revise any forward-looking statement as a result of new information, future events or other information. In light of these risks, results could differ materially from those stated, implied or inferred from the forward-looking statements contained in this report. We may have used certain terms, such as resources, in this report that United States Securities and Exchange Commission (SEC) strictly prohibits us from including in our filings with the SEC. U.S. Investors are urged to consider closely the disclosure in our Form 20-F, File No 1-32575, available on the SEC website www.sec.gov.

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