FEEDBACK
We welcome your input.
Stakeholder feedback is an integral part of our sustainability reporting. Your feedback on this report or Shell’s oil sands activity is important to us.

E-mail: dialogues-canada@shell.com
Phone: 1-800-250-4355

www.shell.ca/oilsands
ABOUT THIS REPORT
This Report is Shell’s fourth Oil Sands Performance Report and covers the areas of: Oil Sands Operations, Safety and Environment, Community, Land and Reclamation.
This Report only provides information on Shell’s operating performance for 2012 for:
- Muskeg River and Jackpine mines
- Scotford Upgrader
- In Situ operations (Peace River and Cold Lake oil sands)

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 between Shell (60%), Chevron Canada Limited (20%) and Marathon Oil Canada Corporation (20%). Data presented for in situ operations is 100% Shell share.
All monetary amounts referenced in the report are in Canadian dollars unless otherwise noted.

OIL SANDS ARE A SECURE, RELIABLE SOURCE OF ENERGY AND AN ECONOMIC ENGINE WHICH DRIVES EMPLOYMENT, TRAINING AND BUSINESS DEVELOPMENT ACROSS CANADA AND BEYOND.
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2012 was a landmark year for Shell’s heavy oil operations as the Athabasca Oil Sands Project passed 500 million barrels of cumulative production in August and then in September we announced we are going ahead with Quest, the world’s first carbon capture and storage (CCS) project for an oil sands operation that from 2015 will potentially see more than one million tonnes of CO2 a year captured from our Scotford Upgrader and safely stored over 2 km underground.

These two milestones speak to the fundamental benefit and challenge of oil sands – providing the energy Canada and the wider world needs while continuing to manage and mitigate the associated environmental impacts.

I believe oil sands are an important energy source that have a role to play in the global energy mix. They are a secure, reliable source of energy and an economic engine which drives employment, training and business development across Canada and beyond.

Energy accounts for almost 25 per cent of Canada’s exports and seven per cent of Gross Domestic Product (GDP). However, Canada cannot be complacent about the benefits of resource development brings nor about the need to continue to raise the bar in environmental performance.

Today, 97 per cent of Canada’s energy exports go to the US, but US domestic production is increasing thanks to new supplies from tight gas and liquid-rich shales. This is affecting the market for Canada’s energy products. There is growth in emerging markets where rapidly increasing wealth and intense urbanization is driving global demand for energy. These are markets that Canada could serve if it makes the necessary investment in infrastructure.

By 2050, more than nine billion people are expected to live on the planet; that’s two billion more than today, and those people will need energy. The challenge is to meet that need while managing the pressures on our environment. These are impacts associated with the development of any energy source and as an operator, Shell’s job is to develop resources responsibly and to keep improving our ability to manage these impacts.

Oil sands development in Alberta occurs under one of the most transparent and progressive regulatory regimes in the world. Indeed, we know more about the impacts of oil sands development than almost any other resources. Under Alberta law, any disturbed land must be reclaimed, and all of our activities are planned, approved, regulated and monitored. As an industry we are continuing to push the envelope to improve environmental performance in ways that we believe are unprecedented in other jurisdictions and in other industries.

The formation of Canada’s Oil Sands Innovation Alliance (COSIA) in March of 2012 with the aim to “enable responsible and sustainable...”
growth of Canada’s oil sands while delivering accelerated improvement in environmental performance through collaborative action and innovation” will be a key enabler in raising the environmental performance bar across the industry. We haven’t been able to identify an equivalent example to COSIA in any other industry anywhere in the world – we believe it is unprecedented and holds significant potential that all of us involved must now work to realise.

We are continuing to embed delivery of our environmental strategies across our operations and our Quest carbon capture and storage (CCS) project is one of the most significant examples of how we are working to improve our performance. The International Energy Agency (IEA) calls CCS “a crucial part of worldwide efforts to limit global warming” and estimates that it could deliver about one-fifth of necessary worldwide reductions in greenhouse gases by 2050. We believe our work to apply CCS to oil sands will benefit not only our operations but provide knowledge to help enable much wider and more cost-effective application of CCS through the energy industry and other sectors in years to come.

In 2013, against a backdrop of commercial pressures on our industry, Shell’s primary focus is on operational excellence – delivering safe, compliant, profitable production – that should see us further reduce the environmental impact for each barrel of oil produced and pave the way for future development and performance improvements.

I was proud to succeed John Abbott as the Executive Vice President of Shell’s Heavy Oil operations in October 2012, in addition to my responsibilities as Shell Canada Country Chair, and look forward to continuing the dialogue with many stakeholders on how to develop these resources responsibly, for the benefit of Canadians, to provide energy, prosperity and economic development, while reducing the impacts of our operations on the environment.

LOURNAINE MITCHEMOR
Executive Vice President, Heavy Oil, April 2013

THE INTERNATIONAL ENERGY AGENCY (IEA) CALLS CCS “A CRUCIAL PART OF WORLDWIDE EFFORTS TO LIMIT GLOBAL WARMING” AND ESTIMATES THAT IT COULD DELIVER ABOUT ONE-FIFTH OF NECESSARY WORLDWIDE REDUCTIONS IN GREENHOUSE GASES BY 2050.

UNDER ALBERTA LAW, ANY DISTURBED LAND MUST BE RECLAIMED, AND ALL OF OUR ACTIVITIES ARE PLANNED, APPROVED, REGULATED AND MONITORED.
Shell has a track record of continuous improvement and innovation to find solutions to energy challenges. We build environmental technology and collaboration into our business plans, and began our Environmental Performance Improvement (EPI) Program in 2012. The following focus areas have been identified under CO2, land, and water to work towards our long-term aspirational goals in each of these environmental performance areas. While we don’t know everything it will take to achieve these goals, we continue to learn and improve.

**CO2**
- Improve energy efficiency
- Use lower carbon energy supplies
- Implement carbon capture and storage
- Purchase offsets to meet compliance (preferably related to our business)

**Land**
- Increase interim reclamation and make use of conservation areas in the near term to bridge the disturbance gap
- Integrate planning and execution of mining, waste disposal, and reclamation
- Continue to provide opportunities for stakeholder participation in reclamation, especially Aboriginal communities
- Improve tailings management technology for faster reclamation
- Develop reduced disturbance technologies for ore recovery

**Long term aspirational goal:**
Land Neutrality (net neutral disturbance footprint)

**Water Management**
- Optimize/use more onsite water at the Muskeg River and Jackpine mines to reduce the Athabasca River water use
- Optimize/integrate water use and wastewater treatment at the Scotford Complex
- Replace fresh water makeup with brackish water for in situ production
- Develop technology to enable reduced river water requirements

**Long term aspirational goal:**
Zero River Withdrawal

*Shell’s Environmental Strategies for Heavy Oil*

*Lorraine Mitchellmore*
Executive Vice President, Heavy Oil
OUR HEAVY OIL OPERATIONS

Canada’s oil sands are one of the most significant remaining oil deposits on Earth. With global energy demand predicted to double in the first half of this century, they are an important part of the global energy mix.

Oil sands are a mixture of sand, clay, water, bitumen and other minerals.

Oil sands are deposited in three regions in Canada: the Athabasca, Peace River and Cold Lake deposits in Alberta. Shell is the only international oil company with production and interests in all three of Canada’s main oil sands deposits. The term oil sands, where used in this report, refers to Shell’s mining, upgrading and in situ operations.

Our Heavy Oil business includes the Athabasca Oil Sands Project (a joint venture between Shell Canada (60%), Chevron Canada Limited (20%) and Marathon Oil Canada Corporation (20%), consisting of mining and extraction at the Muskeg River and Jackpine mines, the Scotford Upgrader, the Quest Carbon Capture and Storage project and In Situ operations.

MINING
Located north of Fort McMurray, the Muskeg River and the Jackpine mines are two adjacent, open pit mines where mining shovels dig into the sand to excavate the ore containing bitumen. Large trucks — each capable of carrying 400 tonnes — transport the oil sands to crushers where it is prepared for bitumen extraction. The bitumen is separated from the sand and clay with warm water. The thick bitumen is then diluted with a solvent so that it can be transported via pipeline to the Scotford Upgrader and converted into synthetic crude oil.

Historically, Shell has had challenges meeting the bitumen recovery targets at Muskeg River Mine. In August 2012 Shell received a high risk enforcement action letter from the Energy Resources Conservation Board in Alberta for failure to meet bitumen recovery requirements. We are taking this very seriously and have been and will continue to work diligently to address the underlying performance of our facilities that has resulted in the notice.

SCOTFORD UPGRADER
The Upgrader, located north of Edmonton, processes bitumen mined from the Muskeg River and Jackpine mines by adding hydrogen to the bitumen, breaking up the large hydrocarbon molecules to create synthetic crude oil. This hydrogen technology results in a slight volume gain during the upgrading process, which means the Upgrader yields approximately 1.03 barrels of synthetic crude from every 1.00 barrels of bitumen. It is integrated with Shell’s Scotford Refinery, making it one of the most energy efficient facilities of its kind. The Upgrader is also connected to Quest, our Carbon Capture and Storage project.

The Scotford Upgrader is rated #1 in terms of energy intensity by Solomon’s Energy Intensity Index when compared to other upgraders and refineries worldwide.

CARBON CAPTURE AND STORAGE
On September 5, 2012, Shell announced that we would proceed with the Quest Carbon Capture and Storage (CCS) Project. Quest is the world’s first oil sands CCS project and has the potential to reduce CO2 emissions from Shell’s oil sands operations by more than one million tonnes a year by capturing CO2 from its Scotford Upgrader and storing it more than two kilometers underground. The Quest project will be built on behalf of the Athabasca Oil Sands Project joint venture owners (Shell, Chevron and Marathon Oil) and with support from the Governments of Canada and Alberta, and is expected to begin capturing and storing CO2 in 2015.

Read more about the Quest CCS Project on page 13.

IN SITU
80 per cent of Canada’s oil sands resources too deep to be mined are recovered in place or in situ, by drilling wells. Shell uses two methods to extract bitumen in situ: thermal recovery and cold production. Thermal recovery involves injecting steam underground to heat the bitumen to allow it to flow before pumping it to the surface, leaving the sand and clay in place. Where the bitumen is more mobile, cold production techniques involve using long horizontal or vertical wells to pump the product to the surface without the need for heat.

The Peace River Complex produces bitumen using thermal and cold recovery methods. Shell’s other cold production facilities include the Cliffside Battery and production from the Chipulin field. Shell’s Citizen project, which came on stream in 2007, is a project in the Cold Lake area which uses Steam Assisted Gravity Drainage (SAGD) to produce heavy oil. In 2012 we divested our Seal In Situ assets to manage our portfolio so that we focus on growing our core assets.

Read more about the Peace River Complex on page 30.
Shell announced Final Investment Decision for the Quest Carbon Capture and Storage (CCS) project in the fall of 2012, and commenced the construction phase in late 2012. The Quest CCS Project is expected to reduce CO2 emissions from Shell’s oil sands operations by more than one million tonnes a year by capturing CO2 from the Scotford Upgrader and permanently storing it deep underground – equivalent to taking 175,000 cars off the road.

The CO2 will be permanently and safely stored more than two kilometres underground under multiple geologic formations in a saline formation.

In Canada and the United States, established projects are already storing CO2 in saline formations, oil and gas reservoirs, and coal seams. Internationally – from Australia to Norway – governments are expanding their efforts to fund CCS project development. Quest is the world’s first oil sands CCS project and a flagship CSS project on a global scale for Shell.

The regulatory application for the Jackpine Mine Expansion (JPME) Project was submitted in 2007, describing additional mining areas, processing facilities, utilities and infrastructure to support production of an additional 100,000 barrels (approximate) per day.

A regulatory decision is expected to be published in 2013. After this decision is published, we will then evaluate the project for possible investment.

Regulatory approval is currently being sought for a 200,000 barrel per day development of the Pierre River Mine.

Regulatory approval is currently being sought for 80,000 barrels per day for the Carmon Creek in situ project in Peace River.

In 2012 we began work on a series of debottlenecking projects for our mining operations to unlock efficiency in our existing equipment and operations. These projects could add up to 85,000 barrels per day in production growth over the next decade as we take investment decisions in a phased approach.

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In the summer of 2012, the AOSP produced its 500 millionth barrel of bitumen. This is a tremendous achievement for Shell’s oil sands business and is the result of almost ten years of hard work and innovation by thousands of employees and contractors.

The regulatory application for the Jackpine Mine Expansion (JPME) Project was submitted in 2007, describing additional mining areas, processing facilities, utilities and infrastructure to support production of an additional 100,000 barrels (approximate) per day.

Beginning on October 29, 2012, a Joint Review Panel convened a public hearing in Fort McMurray, Alberta to give interested individuals and organizations an opportunity to ask questions about the JPME Project and provide their views to the Panel. This panel is an independent body mandated by the Canadian Minister of the Environment and the Chairman of the Alberta Energy Resources Conservation Board to assess the environmental effects of the proposed JPME project and ultimately decide whether it is in the public interest.

A regulatory decision is expected to be published in 2013. After this decision is published, we will then evaluate the project for possible investment.

ATHABASCA OIL SANDS PROJECT (AOSP) PRODUCES 500-MILLIONTH BARREL OF BITUMEN

In the summer of 2012, the AOSP produced its 500 millionth barrel of bitumen. This is a tremendous achievement for Shell’s oil sands business and is the result of almost ten years of hard work and innovation by thousands of employees and contractors.
Shell’s involvement with multi-stakeholder groups is an important part of our environmental management strategy. We are active members of:

**THE OIL SANDS DEVELOPERS GROUP**  
[www.oilsandsdevelopers.ca](http://www.oilsandsdevelopers.ca)

**THE CANADIAN ASSOCIATION OF PETROLEUM PRODUCERS (CAPP)**  
CAPP's mission is to enhance the economic sustainability of the Canadian upstream petroleum industry in a safe and environmentally and socially responsible manner, through constructive engagement and communication with governments, the public, and stakeholders in the communities in which we operate.  
[www.capp.ca](http://www.capp.ca)

**CANADA’S OIL SANDS INNOVATION ALLIANCE (COSIA)**  
Shell played a key role in forming this new industry coalition, which was publicly announced in March of 2012 to enable responsible and sustainable growth of Canada’s oil sands while delivering accelerated improvement in environmental performance through collaborative action and innovation. COSIA was created because the public’s expectation of environmental performance in the oil sands continues to evolve. We want to meet those expectations and we’ll work collaboratively to do so, building on previous successes. COSIA will help the industry address environmental challenges by breaking down the barriers in the areas of funding, intellectual property enforcement and human resources that may otherwise impede progress on environmental performance. COSIA’s collaborative approach will accelerate the discovery and development of environmental technologies and reduce the time from idea to implementation.  
[www.cosia.ca](http://www.cosia.ca)

**THE MINING ASSOCIATION OF CANADA’S “TOWARDS SUSTAINABLE MINING” INITIATIVE**  
Shell has participated in the voluntary Towards Sustainable Mining initiative developed by the Mining Association of Canada since 2004. Members must subscribe to a set of guiding principles and report on specific performance indicators annually. Shell achieved Level A (categorized as good performance) or better rankings in the most recent review published in fall of 2011. The review verified performance in the areas of crisis management planning, external outreach, energy use, and GHG management and tailings management.  
[www.mining.ca](http://www.mining.ca)

**THE INTEGRATED CO2 NETWORK (ICO2N)**  
We are part of the Integrated CO2 network (ICO2N), a coalition of Canadian companies committed to the deployment of carbon capture and storage in Canada.  
[www.cosia.ca](http://www.cosia.ca)

**ISO 14001**  
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. The EMS system at Shell’s Peace River In Situ operations has been certified since 2001 and 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.  
[www.iso.org](http://www.iso.org)

**THE CUMULATIVE ENVIRONMENTAL MANAGEMENT ASSOCIATION**  
[www.cemaonline.com](http://www.cemaonline.com)

**THE WOOD BUFFALO ENVIRONMENT ASSOCIATION**  
[www.wbea.org](http://www.wbea.org)

**THE REGIONAL AQUATICS MONITORING PROGRAM**  
[www.ramp-alberta.org](http://www.ramp-alberta.org)

**THE CANADIAN ASSOCIATION OF PETROLEUM PRODUCERS (CAPP)**  
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MANAGING CO₂

Affordable energy has long been considered an important factor in enabling economic growth. Fossil fuels currently provide about 80% of the world’s daily energy needs. Shell takes a proactive stance towards CO₂ emissions management.

THE QUEST CCS PROJECT WILL POTENTIALLY REDUCE CO₂ EMISSIONS BY MORE THAN ONE MILLION TONES A YEAR

Wells to Wheels
Measuring CO₂ emissions from oil production (wells) through to combustion (wheels) is known as a well-to-wheels analysis. According to Cambridge Energy Research Associates, on a well-to-wheels basis, CO₂ emissions from oil sands are around 4-18% per cent higher than from the average barrel of crude oil consumed in the USA. Our analysis suggests that Shell’s oil sands mining and upgrading operations produce fuels at the lower end of this spectrum, as a result of emissions reduction measures already in place, such as cogeneration to produce steam and power.

Shell’s Quest Project
Shell announced that we would proceed with the Quest Carbon Capture and Storage (CCS) project in the fall of 2012, moving to the construction phase in late 2012 with final start up planned for 2015. The Quest CCS Project will potentially reduce CO₂ emissions from Shell’s oil sands operations by more than one million tonnes a year by capturing CO₂ from the Scotford Upgrader and permanently storing it deep underground — equivalent to taking 175,000 cars off the road.

Specified Gas Emitters Regulation
The Alberta Specified Gas Emitters Regulation (SGER) came into effect in July, 2007. It requires large industrial emitters that emit more than 100,000 tonnes CO₂ per year to reduce their emissions intensity by 12% from an approved baseline.

Under the SGER, compliance options include implementing energy efficiency projects, generating Emission Performance Credits (EPCs) via cogeneration or by operating below the regulatory target, purchasing certified emission offsets from Alberta-based projects, or through contributions to the Climate Change and Emissions Management Fund at $15 for each tonne of CO₂e over the allowable limit.

2012 Greenhouse Gas Emission Reduction Projects
Installation of Vapor Recovery Units at Peace River Cold Production (read more on page 30)
ShUTDOWN OF TEMORARY BOILERS AT MUSKEG RIVER MINE
Purchase of Emission Performance Credits (EPCs) from renewable power projects such as wind and hydro, acid gas injection projects, and waste water treatment projects.
In addition to projects implemented to reduce GHG emissions, Shell purchases Emission Performance Credits (EPCs) and offsets in order to meet the regulatory targets. Offsets have been purchased from renewable power projects such as wind and hydro, acid gas injection projects, and waste water treatment projects. EPCs are purchased from other regulated facilities that are below their regulatory target.

CO₂ (Oil Sands Operations – Muskeg River Mine, Jackpine Mine, Scotford Upgrader and In Situ)

<table>
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<tr>
<th>Year</th>
<th>Total Direct Emissions (Mt CO₂e)</th>
<th>Total Indirect Emissions (Mt CO₂e)</th>
<th>Total Emissions (Mt CO₂e)</th>
<th>CO₂ Intensity (kg CO₂e/bbl)</th>
<th>CO₂ Intensity Including Offsets (kg/bbl)*</th>
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<tbody>
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<td>2008</td>
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<td>3.2</td>
<td>6.4</td>
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<td>5.3</td>
<td>10.6</td>
<td>62.2</td>
<td>56.4</td>
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</tbody>
</table>

* 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.
Oil sands operations require water to separate bitumen from the sand. Shell uses between two to three barrels of water to extract one barrel of bitumen at our mining operations, of which between one to two barrels are fresh water from the Athabasca River. At the Scotford Upgrader, we draw water to cool hydrocarbon fractions (streams) and produce hydrogen. Scotford uses 0.5 barrels of fresh water to upgrade one barrel of bitumen.

Shell’s Peace River Complex withdraws water from the Peace River to generate steam for bitumen extraction. Water needs at our other Cold Production In Situ operations are largely met by using non-potable water. At our Muskeg River and Jackpine Mines, the amount of Athabasca River freshwater consumed in 2012 was reduced due to an increase in use of mine recycled water in our operations. Additionally, we captured a larger amount of surface runoff and basal water, which was used to further reduce our need for freshwater from the River. At the Scotford Upgrader, we use half a barrel of water to upgrade one barrel of bitumen.

In 2012, the Upgrader began using treated waste water in its cooling towers to reduce the amount of freshwater required from the North Saskatchewan River. This initiative has allowed Scotford to increase production without increasing total water diverted from the River.

At our In Situ operations, we have reduced our total freshwater consumption by 23% from 2011 and currently require an average 1.4 barrels of water to produce one barrel of bitumen.

We now use over 80% recycled water in our mining operations.
Throughout Shell, safety is our top priority. We strive for Goal Zero every day – zero fatalities and no incidents that harm people, or put our neighbours or facilities at risk.

We are continually working to keep our staff and contractors safe by focusing on compliance and tackling the safety culture issues that can lead to unsafe behavior by emphasizing visible, felt leadership at all of our Heavy Oil operating sites. We maintain robust emergency response plans and work closely with first responders, neighbours and other agencies to ensure processes are clear and understood.

OUR 2012 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. Shell Heavy Oil Operations had 60 recordable injuries for a TRCF of 3.0, an increase over 2011 which saw 42 recordable injuries and a TRCF of 1.8.

We remain focused on continuous improvement, continued training and coaching on hazard identification and control, and choosing safe contractors to work on our sites to help keep people safe. To address the increase in recordable injuries in 2012, we have implemented a Visible Safety leadership work plan to increase our emphasis on visible and felt leadership at all of our operating sites heading into 2013.

THE 2012 CANADIAN ASSOCIATION OF PETROLEUM PRODUCERS (CAPP) HEALTH, SAFETY & PERFORMANCE AWARD

The Shell Albian and Scotford Community Safety Program is a three-year investment commitment of $300,000 per year (between 2011 and 2013) for communities neighboring our mining operations near Fort McMurray and the Scotford Upgrader and Quest Carbon Capture and Storage project near Fort Saskatchewan, Alberta.

This program promotes safety initiatives with a focus on motor vehicle safety, injury and fire prevention, and workplace safety and emergency response training for students.

SUPPORTING SAFER COMMUNITIES WITH THE SHELL SAFETY FUND

We are very proud to have been awarded the 2012 CAPP Health, Safety & Performance award for the Scotford Tri-Partite Safety Leadership Initiative, designed to help us reach our safety objective of Goal Zero. This initiative is a collaborative effort between leaders at Shell and contractors and building trades – all of whom operate at Shell’s Scotford Upgrader – to develop a strong safety culture that fits the operational needs and requirements of all of these parties while maintaining focus on Goal Zero.

This program resulted in a reduction of recordable injuries (TRCF) by 65% at Scotford when it was implemented in 2011, with a TRCF reduction from 3.0 in January 2011 to 0.9 in November 2011.

IN 2012, OPERATIONS AT JACKPINE AND MUSKEG RIVER MINES COMPLETED 10,000,000 EXPOSURE HOURS WITHOUT A LOST TIME INJURY.
Tailings can be found across a number of different mining industries. As a by-product of the extraction process, oil sands mining generates tailings, a mixture of water, sand, clay, heavy metals, and residual bitumen. Tailings contain naturally occurring chemicals that are toxic; we monitor them continuously, assess their potential environmental impact, and take measures to protect wildlife and to prevent contamination of surface water and groundwater. Tailings can be either stored in an above ground tailings pond (known as an external tailings facility) or in previously mined-out areas of the mine pit. Tailings ponds serve an important purpose, as they allow water to be re-used, reducing the need for fresh river water in our operations. Over 80% of the water used in Shell’s operations is recycled from the tailings ponds at our two mines.

Placeing tailings in ponds or mined pits also marks the first stage of reclamation. Eventually, nearly all of the water will be removed and the remaining solid tailings will be blended and treated to produce material suitable for use in land reclamation. The coarse sand found in tailings is relatively easy to manage because it rapidly settles and can be used to fill in the mined area for reclamation and for construction purposes.

The main challenge with tailings is the length of time it can take for the clay and silt particles to settle to a more dense material. Several technologies are being advanced so these clays can be dried earlier and the pace of reclamation can be sped up.

Tailings are closely monitored to prevent impacts to surface water and ground water. Several methods are used to limit and manage the small amount of seepage that can occur from tailings facilities. Seepage collection systems capture and pump captured seepage back into the tailings ponds in a closed circuit, while ground water monitoring wells ensure the system is functioning properly. Surface water monitoring around the mine sites is conducted as part of the Regional Aquatic Monitoring Program. In addition, Alberta Environment conducts a water quality monitoring program within the watershed of the two mines. Shell monitors surface water at various locations throughout the Muskeg River watershed. Sampling results are closely monitored to ensure tailings from our facilities do not impact local aquatic resources.

The Alberta industry regulator, the Energy Resources Conservation Board (ERCB), issued a tailings directive – Directive 074 – in 2009 to reduce the amount of liquid tailings, thereby speeding reclamation. While the Directive is technically challenging, Shell supports its objectives.

Shell has submitted required annual tailings plans for Muskeg River and Jackpine mines. Further information on Directive 074 and Shell’s plans to meet the regulation can be found at www.ercb.ca

We continue to work on plans to remediate the inflow of water into a mine pit cell that was being prepared to receive tailings in late 2010. Since that time, we have continued to safely contain the water and have been working to fully understand it and develop an appropriate long-term technical solution. There has been no notable change to the conditions of the water and no measurable inflow for over a year. In March 2013 we started delineation drilling to characterize the feature that allowed water into the cell more fully and will use results from this drilling to confirm future plans for permanent remediation. We continue to update the ERCB on our technical plans and have also shared the plans with other operators, Aboriginal neighbours and other stakeholders.

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Siddharth Nag first joined the Shell Heavy Oil team as a new graduate, and moved to the Tailings team in early 2012.

Sid is now the Atmospheric Fines Drying Supervisor at Shell’s Muskeg River Mine and works with a clear focus on compliance, clearly defined accountabilities, and encourages his team to “think outside the box” in order to achieve the best possible results.

Sid and his team implemented new efficiencies into the Atmospheric Fines Drying process and reduced the cost per tonne for tailings by 32% in 2012.

"We will continue to focus on safety and Goal Zero while maintaining the positive changes we have achieved in our performance.”
OUR ABORIGINAL RELATIONSHIPS

In 2012, a new Consultation and Indigenous Relations (CIR) Team came together under the leadership of our Global Indigenous Peoples Manager. This team is made up of 30 individuals – over 60% of whom are Aboriginal, including half of the team’s managers.

The CIR Team has oversight and responsibility for Aboriginal Consultation, Public Consultation, Aboriginal Community Relations, and Aboriginal Content (including capacity building and policy).

We consult Aboriginal communities extensively on our operations and planned development projects. We have provided funding for traditional land use, traditional knowledge studies, and technical reviews of future planning and impact assessments. We also host open houses and workshops to maintain transparent relationships with our Aboriginal neighbours, building trust and placing value on differing perspectives.

We build and maintain strong relationships with Aboriginal businesses within areas that surround our operations. At the end of 2012, we had invested more than $1.25 billion with Aboriginal businesses as part of the Athabasca Oil Sands Project (AOSP) since 2005. All of these business relationships are based on the same criteria and standards as our relationships with non-Aboriginal businesses.

Shell sponsored its first-ever Contractors Showcase Tradeshow in Fort Chipewyan and Fort McKay (both Aboriginal communities in Northern Alberta) in 2012. We recognize that one of the best opportunities for Aboriginal businesses to provide services to Shell is by subcontracting to our contractors, and this Showcase Tradeshow was aimed at creating an opportunity for our current contractors to have face-to-face discussions with these Aboriginal community members to share information about employment opportunities.

This year, Shell also implemented a fly-in fly-out program for the community of Fort Chipewyan in Northern Alberta, in response to demand from community members who wish to work in our oil sands operations while continuing to live in their communities. So far, we have successfully recruited several community members to work in Mine Maintenance, staying at the Albian Village Camp while on shift.
MANAGING EMISSIONS

Shell has produced bitumen from its Peace River oil sands leases for more than 30 years.

Shell currently operates two bitumen production facilities on its leases. The Peace River Complex, which injects steam into the reservoir to produce bitumen from the oil sands reservoir, and the Cliffdale Battery which uses cold (primary) production methods to produce bitumen.

With the increase in industry cold production activities on the Peace River oil sands leases, in recent years residents in the area have expressed concerns related to odours from cumulative emissions. Mitigating any potential negative impacts that our operations may have on our neighbours is important to Shell and we have taken a number of steps to respond to their concerns.

One potential odour source is related to the venting that occurs from heated tanks on cold production well pads. These tanks collect the bitumen until it can be transported to production facilities. Although not required to do so by regulations, in 2012 Shell installed vapour recovery units on all of its Cliffdale well pads to eliminate venting from these tanks. We further committed to shut in production from these wells rather than vent should these units stop functioning.

In the last three years, Shell has implemented other changes that have reduced emissions from both its thermal and cold operations. Shell completed a compression, dehydration and pipeline system to allow it to inject casing vent gas from thermal production into an underground reservoir instead of burning the gas as a fuel source at the Peace River Complex, thus substantially reducing its sulphur dioxide emissions. It also constructed a gas gathering system to gather casing vent gas from the Cliffdale cold production. This gas, which previously would have been flared, is now compressed and pipelined to the Peace River Complex for use as fuel gas for its operations.

Shell also continues to work with other area operators, regulators and community residents on air monitoring initiatives. In addition to funding its own continuous air monitoring trailer located east of its Peace River Complex, Shell partnered with other operators to jointly fund two additional continuous air monitoring trailers in the area of cold production operations. Air monitoring results are shared with community residents on an ongoing basis. A number of committees, with industry and community representatives, have also been established to work on solutions to address residents’ concerns related to odours as well as other cumulative impacts related to industry activity.

In June 2012, Shell pled guilty to a charge under Canada’s Fisheries Act for an incident that occurred in August 2009 involving an accidental release of a substance from its source facility into the Peace River. The source water facility, located approximately 25 km downstream of the town of Peace River, takes water from the river to generate the steam for its Peace River Complex. The substance released was primarily water and sodium bisulphite, a common industrial agent used to remove oxygen from water to prevent pipeline corrosion.

Since the incident, Shell has taken a number of actions to ensure this type of event can not recur, including putting new infrastructure in place that exceeds regulatory requirements and conducting an extensive review of our environmental management systems and procedures.

Shell was fined $225,000, with $202,500 of the fine paid to the Environmental Damages Fund to be used to promote the conservation and protection of fish and fish habitat in the Peace River.

In Peace River, Alberta.
SOCIAL INVESTMENT

While the most significant opportunities we bring to local communities are those directly related to our operations, we also invest in the general well being of the community and the broader publics who grant our license to operate.

Shell’s social investment programs and initiatives facilitate capacity-building and provide economic and social development opportunities benefitting not only our business but also the communities in which we operate.

Since 2000, Shell in Canada has invested more than $75 million in a wide range of initiatives and contribute our efforts in five main areas: Environment, Education, Employees, Aboriginal and Community.

In 2012, Shell made over $3,890,000 in contributions on behalf of the Athabasca Oil Sands Project and our in situ operations.

Full details on Shell’s social investment program are available at www.shell.ca/community.

I AM BURSTING WITH PRIDE ON BEHALF OF ALL OUR EMPLOYEES, AS WELL AS CHEVRON AND MARATHON OIL, TO ANNOUNCE THAT SHELL WILL BE THE LEAD, TITLE PARTNER FOR THE MACDONALD ISLAND PARK EXPANSION.

TOM PURVES
Shell Albian Sands VP

1 MILLION FOR SCIENCE AND TECHNOLOGY CENTRE

In March 2012, Shell along with the other joint venture owners, Chevron and Marathon Oil, announced a $1 million contribution to Father Patrick Mercredi Community High School Science and Technology Centre in Fort McMurray.

“We needed to do something for our high school students to better engage them,” said Kim Jenkins, Superintendent of Schools for Fort McMurray Catholic School District. “Thanks to supporters and industry partners like Shell Canada, Father Mercredi was equipped with labs, tools and equipment necessary to properly instruct these students as they work towards their certificate.”

“It has become an ongoing learning experience, even for staff at the school, who focus on supporting students to follow their passions,” says Mr. Tim Kilburn, Science and Technology Consultant at Father Mercredi.

THANKS TO SHELL’S FUNDING, FOR THE FIRST TIME, WE ARE FOCUSING ON COMPREHENSIVELY ADDRESSING SOME OF THE CHALLENGES OF THE HOMELESS IN TRYING TO ACCESS HEALTH CARE PROGRAMS.

JAMES WAL, Project Coordinator with Alberta Health Services

SHELL PLACE AT MACDONALD ISLAND PARK – SHELL’S SECOND LARGEST SOCIAL INVESTMENT EVER IN CANADA

MacDonald Island Park is Canada’s largest community, recreational, cultural and social centre, and now Shell has its place here in the heart of Fort McMurray and the region.

Shell Albian Sands VP, Tom Purves shared, “I am bursting with pride on behalf of all our employees, as well as Chevron and Marathon Oil, to announce that Shell will be the lead, title partner for the MacDonald Island Park Expansion, from here on as Shell Place.”

The facility will include an Outdoor Performance Stadium, Shared Space Community Centre that will help grass roots thrive, and a Tournament Centre, among many other features. This $2.5 million partnership with MacDonald Island Park marks the second biggest-ever for Shell in Canada.

“Because of this partnership, we’re able to take a huge step towards ensuring that our key community programs and services remain as accessible and affordable as possible in an ever-growing region of the country,” added Tim Reid, Chief Operating Officer at MacDonald Island Park. “We believe that Shell Place will be a much-needed and iconic addition to a new City Centre and we thank Shell for contributing in a major way to this journey.”

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LAND AND RECLAMATION

Canada’s oil sands lie under approximately 142,200 km² of land, according to Alberta Environment*. About three per cent of that land could potentially be impacted by mining methods, which is approximately 0.1% of Canada’s boreal forest.

The remaining reserves that underlie the surface area are too deep to access by mining and are only recoverable by in situ drilling, which requires less surface land disturbance. In situ operations have a substantially smaller footprint than those of mining operations because bitumen separation is conducted underground. Mining involves moving large quantities of overburden (soil, rock and other materials) by truck and shovel before the bitumen can be extracted. Our mines move about one cubic metre of overburden to process 1.33 cubic metres of oil sands ore.

Oil sands operations have long lifespans, with some producing for over 40 years. Although reclamation work is constantly underway, full reclamation is a staged process and takes several decades to complete. Shell is committed to starting large-scale reclamation within 20 years from the first day of land disturbance. Although we’re a new mine, we have already reclaimed approximately 200 hectares of our Muskeg River Mine.

<table>
<thead>
<tr>
<th>LAND AND RECLAMATION***</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td><strong>MM</strong></td>
</tr>
<tr>
<td>2008 2009 2010 2011 2012</td>
</tr>
<tr>
<td>Total active footprint – mine + plant size (ha)</td>
</tr>
<tr>
<td>Permanent reclamation (ha)</td>
</tr>
<tr>
<td>Temporary reclamation (ha)</td>
</tr>
</tbody>
</table>

| **JPM**** |
| 2008 2009 2010 2011 2012 |
| Total active footprint – mine + plant size (ha) | - - 3,541 4,301 4,925.4 |
| Permanent reclamation (ha) | - - 0 0 0 |
| Temporary reclamation (ha) | - - 6 0 3.3 |

** No historical information exists for Jackpine Mine in 2008 or 2009 as 2010 is the first reporting year following start-up of the mine.
*** Please note: land and reclamation data has been updated from previous reports due to revised methodology for calculating volumes.

---

*“Understanding the Oil Sands land Fact Sheet” Alberta Environment, September 2011.
Aboriginal Elders and users of the land teach us about the traditional roles of land, vegetation and wildlife in their culture to help ensure that once mining ends, the land will meet local needs.

Working with Others
We continue to seek to work with our Aboriginal neighbours in an effort to incorporate their thinking and traditional knowledge into our management of land and reclamation efforts. Aboriginal elders and users of the land teach us about the traditional roles of land, vegetation and wildlife to help ensure that once mining ends, the land will meet local needs.

Shell’s commitment to reclamation efforts and boreal forest research can also be seen in the over $500,000 that will be donated over a five year period to NAIT’s Boreal Research Institute in Peace River, Alberta, to support boreal forest reclamation research. This long-term donation was part of a $2.3 million grant towards boreal forest research over a five year period.
THE SHELL TRUE NORTH FOREST

The Shell True North Forest is a 1,820 acre (740 ha) area of protected boreal forest in northern Alberta. The land was secured through an arrangement with the Alberta Conservation Association. Together both parties will develop a conservation management plan to guide future activity on the property. The plan will identify potential opportunities to enhance wetlands or plant additional trees. As portions of the land were previously used for cattle grazing and hay production, these areas will be allowed to reforest over time, naturally returning to their original boreal forest state.

Shell has a land reclamation strategy in place to guide environmental performance in our oil sands business. As oil sands reclamation takes decades to complete, conserving land allows us to take action in the short term. Over the next decade Shell plans to accelerate the pace of land reclamation and develop technologies to reduce future land disturbance.

The Athabasca Oil Sands Project (AOSP) has been conserving habitat in the boreal wilderness since 2007 as part of a commitment with the Oil Sands Environment Coalition (OSEC). The AOSP committed to spend $2 million over ten years to help mitigate, and partially offset, land and habitat disturbances resulting from existing mining operations. With the addition of the True North Forest, we have now conserved over 3000 acres of habitat conservation land.

Responsible management will ensure the Shell True North Forest remains a protected natural haven well into the future.

To learn more, visit www.shell.ca/truenorthforest

RESponsible management will ensuRe the shell true NorTh forest reMains a protecTed natural hAven wEll into the future.

SHELL RECEIVES THE MAJOR RECLAMATION AWARD FROM ALBERTA CHAMBER OF RESOURCES

On February 8, 2013, Shell Canada was awarded the Major Reclamation Award from the Alberta Chamber of Resources (ACR) for a peatland well pad reclamation program being conducted on its Peace River oil sands leases.

The ACR is an industry association that works with the government of Alberta to help provide leadership for the orderly and responsible development of Alberta’s natural resources. The ACR’s commitment to being a voice for the resource industry is supported by its Major Reclamation Award, which reflects the importance of long-term corporate commitment to reclamation. An Alberta Environment and Sustainable Resource Development department process was used for award selection.

Shell started discussions with Alberta Environment and Sustainable Resource Development about the development of a new well pad reclamation program after Alberta Environment released its publication, Reclamation Criteria for wellsite and Associated Facilities – 2007 Forested Lands in the green Area Update. In an effort to create a plan that would meet the new expectation outlined in the publication, Shell started discussions with Alberta Environment and Sustainable Resource Development about the development of a new well pad reclamation program.

Shells established a research team with Sustainable Resource Development, expert peatland researchers Dr. Dale Vitt and Dr. Kelvin Wider as well as numerous graduate students and research staff from the Universities of Alberta, Villanova in Pennsylvania, and Southern Illinois. The research team was developed to establish best management practices and create criteria for well pad reclamation and will continue to do so in the future.

Boreal forest research is particularly important to Shell as it is vital to its many assets located throughout the Alberta boreal forest. Reclamation of all affected areas is crucial to the successful completion of any Shell project. The oil sands beneath Shell’s Peace River leases contain several billion barrels of bitumen in place. Shell uses both cold and thermal recovery techniques to extract bitumen from these leases. The Peace River plant is licensed to produce 12,500 barrels (2,000 cubic meters) of bitumen per day annual average.

HABITAT CONSERVATION LAND – THE SHELL TRUE NORTH FOREST

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OVER THE NEXT DECADE SHELL PLANS TO ACCELERATE THE PACE OF LAND RECLAMATION AND DEVELOP TECHNOLOGIES TO REDUCE FUTURE LAND DISTURBANCE.

Shell has a land reclamation strategy in place to guide environmental performance in our oil sands business. As oil sands reclamation takes decades to complete, conserving land allows us to take action in the short term. Over the next decade Shell plans to accelerate the pace of land reclamation and develop technologies to reduce future land disturbance.

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### SAFETY (Rounded to the nearest 1,000 hour)

<table>
<thead>
<tr>
<th>Year</th>
<th>Exposure Hours (million)</th>
<th>Total Recordable Cases</th>
<th>Total Recordable Case Frequency</th>
<th>Lost Time Injuries</th>
<th>Lost Time Injury Frequency</th>
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<tr>
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<td>30.2</td>
<td>133</td>
<td>3.7</td>
<td>9</td>
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<td>46.6</td>
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<td>155</td>
<td>2.5</td>
<td>8</td>
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<td>42</td>
<td>1.8</td>
<td>4</td>
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<td>2012</td>
<td>20.1</td>
<td>60</td>
<td>3.0</td>
<td>4</td>
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### CO₂ (Oil Sands Operations – Muskeg River Mine, Jackpine Mine, Scotford Upgrader and In Situ)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total direct emissions (Mt CO₂e)</th>
<th>Total indirect emissions (Mt CO₂e)</th>
<th>Total emissions (Mt CO₂e)</th>
<th>Total CO₂e intensity (kg CO₂e/bbl)</th>
<th>Total CO₂e intensity including offsets (kg CO₂e/bbl)*</th>
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</thead>
<tbody>
<tr>
<td>2008</td>
<td>3.2</td>
<td>1.6</td>
<td>4.8</td>
<td>84.0</td>
<td>82.1</td>
</tr>
<tr>
<td>2009</td>
<td>3.2</td>
<td>1.5</td>
<td>4.7</td>
<td>82.8</td>
<td>74.5</td>
</tr>
<tr>
<td>2010</td>
<td>3.7</td>
<td>1.3</td>
<td>5.0</td>
<td>88.5</td>
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<td>2011</td>
<td>4.9</td>
<td>1.9</td>
<td>6.7</td>
<td>86.2</td>
<td>53.5</td>
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<tr>
<td>2012</td>
<td>5.3</td>
<td>1.7</td>
<td>7.0</td>
<td>82.2</td>
<td>56.4</td>
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#### Muskeg River Mine and Jackpine Mine**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total water use (million m³)</th>
<th>Net fresh water consumption (million m³)</th>
<th>Total effluent treated and returned to the river (million m³)</th>
<th>Percentage net fresh water consumption</th>
<th>Percentage total effluent treated and returned to the river</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>92.6</td>
<td>73.3</td>
<td>2.2</td>
<td>50%</td>
<td>79%</td>
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<tr>
<td>2009</td>
<td>94.7</td>
<td>74.2</td>
<td>2.1</td>
<td>58%</td>
<td>78%</td>
</tr>
<tr>
<td>2010</td>
<td>93.4</td>
<td>69.6</td>
<td>2.2</td>
<td>56%</td>
<td>74%</td>
</tr>
<tr>
<td>2011</td>
<td>130.8</td>
<td>101.9</td>
<td>2.6</td>
<td>81%</td>
<td>78%</td>
</tr>
<tr>
<td>2012</td>
<td>142.6</td>
<td>117.5</td>
<td>2.2</td>
<td>82%</td>
<td>78%</td>
</tr>
</tbody>
</table>

### WATER

#### Scotford Upgrader

<table>
<thead>
<tr>
<th>Year</th>
<th>Total water use (million m³)</th>
<th>Net fresh water consumption (million m³)</th>
<th>Total effluent treated and returned to the river (million m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>6.0</td>
<td>3.3</td>
<td>2.7</td>
</tr>
<tr>
<td>2009</td>
<td>6.3</td>
<td>3.7</td>
<td>2.6</td>
</tr>
<tr>
<td>2010</td>
<td>5.5</td>
<td>3.4</td>
<td>2.1</td>
</tr>
<tr>
<td>2011</td>
<td>7.4</td>
<td>4.8</td>
<td>2.6</td>
</tr>
<tr>
<td>2012</td>
<td>7.3</td>
<td>5.6</td>
<td>2.1</td>
</tr>
</tbody>
</table>

#### In Situ

<table>
<thead>
<tr>
<th>Year</th>
<th>Total freshwater consumption (million m³)</th>
<th>Freshwater intensity (bbl water consumed/bbl in situ bitumen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>2.2</td>
<td>1.8</td>
</tr>
<tr>
<td>2009</td>
<td>2.1</td>
<td>1.9</td>
</tr>
<tr>
<td>2010</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>2011</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>2012</td>
<td>1.7</td>
<td>1.4</td>
</tr>
</tbody>
</table>

---

*This data is intended to show the offsets are not seeking to offset the impact of emissions from our operations and does not suggest a physical reduction in overall emissions or intensity.

**Water accounting of water use at our mine sites in 2010 has seen the inclusion of freshwater from other sources.

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OIL SANDS PERFORMANCE REPORT DATA
### Tailings

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRBM</td>
<td>112.5</td>
<td>118.8</td>
<td>82.2</td>
<td>96.3</td>
<td>108.8</td>
</tr>
<tr>
<td>JPM*</td>
<td>0</td>
<td>0</td>
<td>58.6</td>
<td>136.6</td>
<td>132.2</td>
</tr>
</tbody>
</table>

* Please note: tailings data has been updated from previous reports due to revised methodology for calculating volumes.

### Land and Reclamation

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRBM</td>
<td></td>
<td></td>
<td>5,735</td>
<td>5,900</td>
<td>6,246</td>
</tr>
<tr>
<td>Total active footprint – mine + plant size (ha)</td>
<td></td>
<td></td>
<td>5,735</td>
<td>5,900</td>
<td>6,246</td>
</tr>
<tr>
<td>Permanent reclamation (ha)</td>
<td>21</td>
<td>16</td>
<td>16</td>
<td>0</td>
<td>38.7</td>
</tr>
<tr>
<td>Temporary reclamation (ha)</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>93.5</td>
<td>196</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>JPM***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total active footprint – mine + plant size (ha)</td>
<td>-</td>
<td>-</td>
<td>3,541</td>
<td>4,301</td>
<td>4,923.4</td>
</tr>
<tr>
<td>Permanent reclamation (ha)</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Temporary reclamation (ha)</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>0</td>
<td>3.3</td>
</tr>
</tbody>
</table>

* Please note: land and reclamation data has been updated from previous reports due to revised methodology for calculating volumes.

** No historical information exists for Jackpine Mine in 2008 or 2009 as 2010 is the first reporting year following start-up of the mine.

### Community

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social investment spend (millions)</td>
<td>1.5</td>
<td>2.7</td>
<td>2.5</td>
<td>3.4</td>
<td>3.9</td>
</tr>
<tr>
<td>Aboriginal spend (millions)</td>
<td>212</td>
<td>222</td>
<td>185</td>
<td>159</td>
<td>175</td>
</tr>
</tbody>
</table>

* Please note: tailings data has been updated from previous reports due to revised methodology for calculating volumes.

** Please note: land and reclamation data has been updated from previous reports due to revised methodology for calculating volumes.

*** No historical information exists for Jackpine Mine in 2008 or 2009 as 2010 is the first reporting year following start-up of the mine.
**Athabasca Oil Sands Project (AOSP)**
A joint venture among Shell Canada Limited (60%), 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, located near Edmonton, Alberta.

**Bitumen**
A thick hydrocarbon, referred to as heavy oil.

**Climate Change and Emissions Management Fund**
The fund set up under the Climate Change and Emissions Management Act that is used to support research, development and deployment of transformative change technologies to reduce greenhouse gas emissions in Alberta.

**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)

**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), 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.

**Heavy Oil**
Refers to Shell's upgrading, mineable and in situ oil sands business.

**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 kilometers. 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.

**M&M**
Muskeg River Mines.

**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 mining. 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.

**Permanent Reclamation**
Landform construction and contouring, placement of capping and reclamation materials and revegetation for terrestrial or wetland areas. Land cannot be listed under the permanent reclamation category until revegetation has occurred that is reflective of the approved Reclamation Plans.

**Temporary Reclamation**
Includes seeding, planting or natural regrowth of vegetation in areas slated to be re-disturbed by future mining or construction activities. This is often done to control erosion and achieve slope stability.

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

**Specified Gas Emitters Regulation**
Regulates six GHG species – carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), PFCs, HFCs, and sulphur hexafluoride (SF₆) – for facilities emitting over 100,000 tonnes of CO₂ per annum in Alberta.

**Steam Assisted Gravity Drainage (SAGD)**
A method of producing heavy oil which involves two horizontal wellbores, one above the other; steam is injected into the upper wellbore and softened bitumen is recovered from the lower wellbore.

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

**Tailings**
The residual byproduct 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.
OVERALL

Data cited in this report has been confirmed as of March 2013. If substantial data changes occur after preparation of this report, they will be updated in next year’s publication.

CO2

Total CO2 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 impact benefit agreements.

CAUTIONARY NOTE

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, 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 those 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, forecasts, projections and assumptions. These forward-looking statements are identified by their use of terms and phrases such as “anticipate”, “believe”, “could”, “estimate”, “expect”, “intend”, “may”, “plan”, “project”, “probably”, “propose”, “will”, “want”, “will”, “goals”, “should” 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 trading conditions; (c) changes in demand for Shell’s products; (d) currency fluctuations; (e) drilling and production results; (f) reserves estimates; (g) loss of market share and industry competition; (h) environmental and physical risks; (i) risks associated with the identification of suitable potential acquisition properties and targets, and successful negotiation and completion of such transactions; (j) the risk of doing business in developing countries and countries subject to international sanctions; (k) legislative, fiscal and regulatory developments including potential litigation and regulatory reviews as a result of climate changes; (l) economic and financial market conditions in various countries and regions; (m) 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 (n) 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 therefore exercise caution in reliance on forward-looking statements. Additional factors that may affect future results are contained in Royal Dutch Shell’s 20-F for the year ended 31 December, 2012 (available at www.shell.com/investor and www.sec.gov). These factors also should be considered by the reader. Each forward-looking statement in this section speaks only as of the date of this report. April 2013 - Neither Royal Dutch Shell 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.

APPENDIX