

1 OVERVIEW

1.1 PURPOSE

Information contained in this submission is provided to the Joint Review Panel (JRP) to:

- Respond to the 46 Supplemental Information Requests (SIR) issued to Shell by the JRP on January 30, 2012;
- Address commitments made by Shell to provide additional information requested by stakeholders; and
- Address errors or omissions identified in the JPME Application, its EIA and Updates since the last Errata was filed on December 15, 2011.

1.2 STRUCTURE OF SUBMISSION

This submission is composed of the following main sections:

- Section 1.0 Overview;
- Section 2.0 Project Errata;
- Section 3.0 Shell Responses to Supplemental Information Requests;
- Appendices Appendices 1 to 6; and
- Attachment Geological electronic data files.

Given the technical nature of certain SIRs, a high level summary response has been provided in Section 3.0 with additional details provided in the Appendices. Requested geological data files are filed as an electronic Attachment (*dwg* and *csv* format).

Table 1-1 provides a concordance of all SIRs that may have supporting information in the Appendices. Table 1-1 also includes information on commitments referenced in Shell's letter to the JRP during the application sufficiency review. These commitments include:

- consideration of all future foreseeable projects or activities as of the date of the JRP TOR (September 2011);
- consideration of reasonably foreseeable forest harvesting plans over the operating life of the Project;
- consideration of the effects of past and future forest fires;
- updated socio-economic information;
- an assessment of the potential effects of the Project on the Peace Athabasca Delta (PAD); and
- use of updated Alberta Biodiversity Monitoring Institute (ABMI), Alberta Conservation Management Information System (ACMIS) and Fisheries and Wildlife Management Information System (FWMIS) information as of September 2011.

Table 1-1 Joint Review Panel Supplemental Information Request (SIR) and Commitment Concordance to Supporting Information

SIR Category	Location of Supporting Information	
	SIR	Appendix or Attachment
General	1	-
General	2	Attachment
General	3	Attachment
General	4	-
General	5	-
Need, Purpose and Rationale of Project	6	-
Alternatives to the Project	7	-
Determination of Jackpine Mine Expansion Project Effects	8	Appendices 1 and 3
Significance of Effects	9	-
Significance of Effects	10	Appendices 1 and 2
Cumulative Effects	11	Appendices 2 and 3
Terrestrial - Vegetation, Wetlands & Forest Resources	12	Appendix 1
Terrestrial - Vegetation, Wetlands & Forest Resources	13	-
Terrestrial - Vegetation, Wetlands & Forest Resources	14	Appendix 2
Terrestrial - Vegetation, Wetlands & Forest Resources	15	Appendices 1 and 2
Terrestrial - Vegetation, Wetlands & Forest Resources	16	-
Terrestrial - Wildlife	17	Appendices 1, 2
Terrestrial - Wildlife	18	Appendices 2 and 3.1
Terrestrial - Wildlife	19	Appendix 4
Terrestrial - Wildlife	20	Appendix 2
Terrestrial - Species at Risk	21	Appendix 4
Terrestrial - Species at Risk	22	-
Aquatic Resources - Fish & Fish Habitat	23	-

Table 1-1 Joint Review Panel Supplemental Information Request (SIR) and Commitment Concordance to Supporting Information (continued)

SIR Category	Location of Supporting Information	
	SIR	Appendix or Attachment
Aquatic Resources - Water Quality / Quantity	24	-
Aquatic Resources - Aquatic Health	25	Appendix 3.6
Aquatic Resources - Aquatic Health	26	Appendix 3.6
Navigation	27	Appendices 1 and 2
Navigation	28	-
Capacity of Renewable Resources	29	-
Aboriginal Rights & Interests	30	Appendix 5
Aboriginal Rights & Interests	31	Appendix 5
Aboriginal Rights & Interests	32	Appendix 6
Accidents & Malfunctions	33	-
Accidents & Malfunctions	34	-
Accidents & Malfunctions	35	-
Effects of the Environment on the Project	36	-
Climate Change	37	-
Tailings	38	-
Tailings	39	-
Tailings	40	-
Tailings	41	-
Tailings	42	-
Tailings	43	-
Tailings	44	-
Environment	45	-
Environment	46	-

Shell Commitments or Supporting Information	SIR	Appendix
Consideration of all future foreseeable projects or activities as of the date of the Panel's Terms of Reference (September 2011);	11	Appendices 1, 2, and 3.1
Consideration of reasonably foreseeable forest harvesting plans over the operating life of the Project;	11	Appendix 2
Consideration of the effects of past and future forest fires;	11	Appendix 2
Updated socio-economic information;	11, 32	Appendices 2 and 6
Assessment of the potential effects of the Project on the Peace Athabasca Delta; and	11	Appendix 3.4
Use of updated Alberta Biodiversity Monitoring Institute, Alberta Conservation Management Information System and Fisheries and Wildlife Management Information System information as of September 2011.	8	Appendices 1, 2, and 3.1

1.3 APPROACH TO JOINT REVIEW PANEL INFORMATION REQUESTS

The following sections provide a high level explanation of the approach and rationale used by Shell in preparing some of the more detailed elements of this submission.

1.3.1 Background

On October 3, 2011, the JRP requested public comments on the sufficiency of information available on the CEAA registry to meet the JPME JRP TOR. After reviewing these comments (including Aboriginal persons or groups) and Shell's responses to those comments, the JRP issued 46 SIRS on January 30, 2012. Due to the scope of these information requests Shell advised the JRP on March 1, 2012 that this work would require until May 15, 2012 to complete.

1.3.2 Muskeg River Diversion Alternative

The May 2011 Submission of Information to the Joint Review Panel provided an alternative mine development plan which diverted the Muskeg River through an open channel as opposed to a pipeline. The updated assessment cases and related SIR responses contained in this submission are based on this Muskeg River Diversion Alternative (MRDA) which, as explained in SIR 1, is now Shell's application case for the JPME Project.

To facilitate consistent comparisons of data and conclusions, Shell employed identical assessment approaches and methodologies as those employed for the 2007 EIA wherever possible. Exceptions to this are noted and were typically made at the request of regulators.

Shell notes that a number of SIRs regarding tailings management relate to the existing operating area of Jackpine Mine – Phase 1 and the integration of JPME. Similar information is also required under ERCB Directive 074 which Shell reports annually each September as part of its required tailings management plan. These annual reports supersede information provided in this submission as they reflect the current operating status at the Jackpine Mine. Since the information filed in the SIRs shows an integrated Jackpine Mine (Phase 1 and JPME), data comparisons between the annual ERCB Directive 074 reports and the SIR information are not possible.

1.3.3 Approach to the Pre-Industrial and Updated Planned Development Cases (SIR 11)

In the preamble to SIR 11, the JRP requests Shell to provide an update to its Cumulative Effects Assessment including a Pre-Industrial Case (PIC), forest harvesting plans, effects of past and future forest fires in the RSA, and an update on future foreseeable projects or activities as per the JPME JRP TOR.

The updated PDC requested by the JRP assesses the cumulative effects that could result from existing and approved developments, the JPME, and planned (publicly disclosed) developments in the Oil Sands Region, as of September 2011. It also incorporates additional information committed to by Shell (ie., assessments for the PAD, forest harvest and forest fires, updated socio-economic, ABMI, ACMIS, and FWMIS information as of September 2011).

In the 2007 EIA and subsequent regulatory submissions that pre-date this submission, data intended to represent the environment prior to industrial development has been referred to as “Pre-Development” or the “Pre-Development Case”. In the interests of consistency and clarity, this information has been re-titled PIC for this submission to avoid confusion with the term Planned Development Case (PDC).

To allow a meaningful comparison between the various assessment cases within this submission, the EIA Base Case and the Application Case, as amended through subsequent regulatory submissions that pre-date this submission, also required significant updating to account for the revisions to the September 2011 project inclusion list. For example, Total Joslyn North Mine has been added to the Base Case given that regulatory approval had been granted for this project in 2011. Detailed lists of the projects included in the updated assessment cases are provided in Appendix 3.1 (Section 2.4).

To avoid confusion between the various assessment cases and their respective revisions, the following nomenclature has been adopted for this submission:

- All references to the “EIA” refer to the 2007 EIA, as amended.
- All references to the “EIA Base”, “EIA Application” and “EIA Planned Development” cases refer to the 2007 EIA cases, as amended.

- All references to the updated assessments contained in this submission are referred to as:
 - 2012 Base Case;
 - 2012 JPME Application Case; and
 - 2012 PDC.

Note that “JME” and “JPME” have been used interchangeably in all of Shell’s documentation. Both represent the Jackpine Mine Expansion Project.

The PIC is intended to represent conditions before substantial industrial development occurred in the region. Since information for some components is lacking, the PIC is based on the oldest data available, or on the most representative data available for each component rather than on a consistent year basis.

Shell’s response to SIR 11 in Section 3.0 provides a brief overview of the PIC and the 2012 PDC for JPME. Detailed information for the PIC and the 2012 PDC are provided in Appendix 2 as Part 1 and Part 2, respectively. The response to SIR 11 was developed with consideration of the other JRP information requests, items raised by regulators and stakeholders during the EIA sufficiency review, and commitments made previously by Shell for supporting assessment work. Supporting methodologies and detailed assessments are filed in Appendix 3.

1.3.4 Approach to the Jackpine Mine Expansion Project Effects (SIR 8)

In the preamble to SIR 8, the JRP notes that the original EIA for the JPME and Pierre River Mine (PRM), as amended, contains some sections where assessment results were combined for the two proposed projects. The JRP requested that Shell provide effects related to JPME alone for specific components of the EIA. These components, as listed in SIR 8, include “Species at Risk; Wildlife Abundance; Wildlife Health; Economic Forests; Rare Plants, Rare and Special Plant Communities, Traditional Plant Potential; Effects of Air Emissions on Vegetation, Health, etc.”

Shell’s response to SIR 8 in Section 3.0 is a summary of the updated 2012 JPME Application Case excluding PRM for the specified sections. Detailed supporting information provided in Appendix 1 was developed with consideration of the other JRP information requests, items raised by regulators and stakeholders during the JPME application sufficiency review, and commitments made previously by Shell for supporting assessment work. Inclusion of these items provides a more robust assessment and maintains consistency between the SIR 8 response and the other

information presented in the submission. Supporting methodologies and detailed assessments are found in Appendix 3.

1.3.5 Approach to the Cultural Assessment (SIR 30)

During the review of Shell's TLU assessment (submitted to the JRP in November 2011), First Nations commented that the assessment did not consider the effects of the JPME and PRM projects on culture. Based on this feedback, Shell undertook an assessment of the effects of the Projects on culture using available TEK and TLU information. This assessment is contained in Appendix 5 and supports the response to SIR 30. The Athabasca Chipewyan First Nation and the Mikisew Cree First Nation have reviewed Shell's cultural assessment and taken issue with the manner in which Shell has interpreted and used this TEK and TLU information. The nature of this disagreement has been communicated by letter to the JRP by ACFN and MCFN on May 8, 2012.

1.3.6 Inclusion of Commitments and other Information

(i) Consideration of reasonably foreseeable forest harvesting plans over the operating life of the Project; and consideration of the effects of past and future forest fires

In response to concerns raised by stakeholders regarding the effects of fire and forest harvest in the cumulative effects assessment, additional studies were undertaken to assess potential future changes to landscape composition in the regional study area (RSA). Although these effects can be incorporated using simple assumptions, Shell utilized the services of the ALCES Group to conduct complex and realistic landscape simulations to estimate the distribution of burns and forest harvest cutblocks over the life of the Project.

The ALCES Group previously simulated fire and forest harvest as a component of the Terrestrial Ecosystem Management Framework (TEMF) for the Regional Municipality of Wood Buffalo (CEMA 2008). Two models were applied when exploring potential future changes in landscape composition:

- The ALCES® program was used to simulate the effects of fire, timber harvest, and industrial development in the RSA over a 60-year period.
- The ALCES Mapper® program was used to simulate the potential spatial configuration of fire and timber harvest.

The revised model of burns and cutblocks was applied to the Terrestrial Resources assessment for the Pre-Industrial Case, 2012 Base Case, 2012 JME Application

Case and 2012 PDC in this submission. Detailed information on the use of ALCES[®] models is provided in Appendix 3.1, Attachment A.

(ii) Use of updated Alberta Biodiversity Monitoring Institute, Alberta Conservation Management Information System and Fisheries & Wildlife Management Information System information as of September 2011

Shell has also responded to stakeholder requests for a comparison of terrestrial assessment results against monitoring results of the Alberta Biodiversity Monitoring Institute (ABMI), Alberta Conservation Management Information System (ACMIS) and Fisheries and Wildlife Management Information System (FWMIS) information as of September 2011. These updated systems were incorporated into the assessment of the effects of the 2012 JPME Application Case and 2012 PDC. Additional information on inclusion of these datasets is provided in Appendices 1, 2 and 3.1.

(iii) Assessment of the effects to the Peace Athabasca Delta

During the regulatory review of the JPME and PRM Projects, Shell heard concerns regarding the potential impacts of the Project to the Peace-Athabasca Delta (PAD) from stakeholders, Environment Canada, Parks Canada and Fisheries and Oceans Canada (DFO). While Shell agrees with DFO that the effects on the PAD are best dealt with on a regional level, in response to Environment Canada and Parks Canada's concerns, Shell committed to prepare an assessment of the PAD and include it in the 2012 PDC.

Cumulative effects of the air quality, hydrology and surface water quality were assessed. Shell's response in SIR 11 includes a brief overview of this assessment. Detailed information for the PAD is included in Appendix 3.4.

(iv) Submission of information requested by Environment Canada in 2011

Shell has included additional information in response to requests made by Environment Canada in 2011. In particular;

- Information with regard to updated Chronic Effects Benchmarks (CEBs), and Naphthenic Acids (NAs) is provided
- Assessments pertaining to CEBs and NAs are contained in Appendix 3.6 (Supporting Information for Aquatic Resources). Also included with this Appendix is an attachment which discusses the implications of updated CEBs as it pertains to the EIA's Aquatic Health Assessment.

(v) Submission of information on Aerial Deposition

In response to stakeholder and regulatory requests to evaluate potential effects of aerial deposition of airborne metals and polycyclic aromatic hydrocarbons (PAHs) to snowpack and snowmelt, Shell commissioned Golder Associates to assess the potential impacts of this type of aerial deposition. The assessment examined potential effects from existing and approved projects, JPME, and other reasonably foreseeable projects. The study is considered a first step toward investigating this issue and as such it should be viewed as preliminary.

Appendix 3.5, Aerial Deposition Assessment, provides the modelling methods used to assess potential impacts of aerial deposition to snowpack and snowmelt water concentrations. The modelling approach described was applied to the Jackpine Mine Expansion under existing conditions, 2012 Base Case, 2012 JPME Application Case and 2012 PDC conditions.

(vi) Updated Socio-Economic Information

Shell has provided updated socio-economic information in its 2012 PDC. This information is discussed in Appendix 2 (Section 3.5 and Attachment A). Separately, Shell also filed an assessment of the socio-economic effects on each First Nation or Aboriginal group in response to SIR 32.