

JACKPINE MINE EXPANSION PROJECT JOINT REVIEW PANEL

Calgary, Alberta

SHELL CANADA ENERGY
APPLICATION TO AMEND APPROVAL 9756
JACKPINE MINE EXPANSION PROJECT
FORT MCMURRAY AREA

2013 ABAER 011
AER Application No. 1554388
CEAA Reference No. 59540

SUMMARY AND DECISION

[1] Shell Canada Energy (Shell) applied to the Energy Resources Conservation Board (ERCB) for an amendment to the Jackpine Mine—Phase 1 (Phase 1) Approval 9756 to increase bitumen production. The Jackpine Mine Expansion Project (the Project), located about 70 kilometres north of Fort McMurray, would include additional mining areas and associated processing facilities, utilities, and infrastructure and would increase bitumen production by 15 900 cubic metres per day. Shell submitted an environmental impact assessment (EIA) report to Alberta Environment and Sustainable Resource Development¹, the Canadian Environmental Assessment Agency (CEAA), and the ERCB. The EIA forms part of the application to the ERCB.

[2] The *Oil Sands Conservation Act (OSCA)*, the *Environmental Protection and Enhancement Act*, and the *Water Act* require provincial approvals for the Project. The *Public Lands Act*, the *Municipal Government Act*, and the *Historical Resources Act* require ancillary approvals. The *Fisheries Act* and the *Navigable Waters Protection Act* require federal approvals.

[3] The federal Minister of the Environment and the Chairman of the ERCB entered into the *Agreement to Establish a Joint Review Panel for the Jackpine Mine Expansion Project* (the Agreement) on September 20, 2011. They established the Joint Review Panel (the Panel) under it and appointed Mr. J. D. Dilay, P. Eng. as the Panel chair, and Mr. A. Bolton and Mr. L. Cooke as Panel members. Under the Agreement, the Panel must conduct its review in a manner that discharges the responsibilities of the ERCB under the *Energy Resources Conservation Act (ERCA)* and the *OSCA* and discharges the requirements of the *Canadian Environmental Assessment Act, 2012 (CEAA, 2012)* and the terms of reference attached as an appendix to the Agreement.

[4] In July 2012, *CEAA, 2012* came into force and repealed the *Canadian Environmental Assessment Act*. The Panel's assessment continued under the process established in section 126 of the *CEAA, 2012* as if it had been referred to a review panel under section 38 of the *CEAA, 2012*. The Minister and Chairman signed an amendment to the Agreement on August 3, 2012, to account for the *CEAA, 2012* changes. The amended Agreement states that the Panel's report shall set out the rationale, conclusions, and recommendations of the Panel, relating to the environmental assessment of the Project, including any mitigation measures and follow-up program, and a summary of comments received from the public, including Aboriginal persons and groups. The report must also identify those conclusions and mitigation measures that relate to the environmental effects to be taken into account under section 5 of the *CEAA, 2012*.

¹ Alberta Environment and Alberta Sustainable Resource Development were combined in 2012 to form Alberta Environment and Sustainable Resource Development

[5] The Panel conducted a hearing that began in Fort McMurray, Alberta on October 23, 2012, and concluded in Edmonton, Alberta on November 21, 2012.

[6] On June 17, 2013, the *Responsible Energy Development Act (REDA)* came into force in Alberta. The *REDA* repealed the *ERCA* (which established the ERCB) and created the Alberta Energy Regulator (AER). In accordance with the terms of the *REDA*, the AER assumed all of the ERCB's powers, duties, and functions under Alberta's energy resource enactments, which include the *OSCA*. Under the terms of the *REDA* and its *Transition Regulation*, the AER assumed the position of the ERCB under the Agreement, and it completed the ERCB's responsibilities under the Agreement. Throughout this transition from the ERCB to the AER, the authority of the Panel members continued without interruption in accordance with the *Transition Regulation*.

[7] Section 3 of the *ERCA* required the Panel to consider whether the Project was in the public interest when the Panel conducted the hearing. The Panel has therefore included findings about the public interest in this report to indicate how it considered the public interest when it conducted the hearing. The Panel is also aware of its responsibilities under section 15 of the *REDA* and section 3 of the *REDA General Regulation* and is satisfied that throughout this proceeding and in this decision report it has considered the factors that are identified in those provisions. This includes a consideration of the social and economic effects of the Project and of the effects of the Project on the environment.

Decision

[8] Having regard for its responsibilities under the *REDA*, *ERCA*, *OSCA*, and *CEAA, 2012*, the Panel has carefully considered all of the evidence pertaining to Shell's application. The Panel notes that the Project is in an area that is nearly surrounded by other oil sands mines and in which the government of Alberta has identified bitumen extraction as a priority use. The Panel further notes that Shell's application is for an expansion of an existing oil sands mine project. The Project would provide significant economic benefits for the region, Alberta, and Canada. Although the Panel finds that there would be significant adverse project effects on certain wildlife and vegetation, under its authority as the AER, the Panel considers these effects to be justified and that the Project is in the public interest. The Panel has decided to approve AER Application No. 1554388 and to amend AER Approval 9756, subject to the conditions in appendix 5. The Panel expects Shell to adhere to all of the commitments it made to the extent that those commitments do not conflict with the terms of its AER approval, any other approval or licence affecting the Project, or any law, regulation, or similar requirement that Shell is bound to observe.

[9] The Panel finds that the Project would likely have significant adverse environmental effects on wetlands, traditional plant potential areas, wetland-reliant species at risk, migratory birds that are wetland-reliant or species at risk, and biodiversity. There is also a lack of proposed mitigation measures that have been proven to be effective. The Panel also concludes that the Project, in combination with other existing, approved, and planned projects, would likely have significant adverse cumulative environmental effects on wetlands; traditional plant potential areas; old-growth forests; wetland-reliant species at risk and migratory birds; old-growth forest-reliant species at risk and migratory birds; caribou; biodiversity; and Aboriginal traditional land use (TLU), rights, and culture. Further, there is a lack of proposed mitigation measures that have

proven to be effective with respect to identified significant adverse cumulative environmental effects.

[10] The Panel understands that the provincial and federal governments will need to make separate decisions about the Project, taking into account the Panel's report. The Panel acknowledges that Shell is planning to reclaim the Project footprint to equivalent land capability. The Panel believes that reclamation is useful but that it will not mitigate all of the significant effects because some habitat types cannot be reclaimed (e.g., peatlands), and reclamation will not occur or be complete for many years.

[11] Minimizing adverse effects may be difficult or impractical in a large mine because it generally requires sterilizing bitumen resources, or it may impose constraints that affect the ability to operate the mine in a safe, efficient, and economical manner. However, the Panel is concerned about the lack of mitigation that has proven to be effective for the loss of these habitats and believes that without additional mitigation, significant adverse effects will occur.

[12] The Panel believes that conservation offsets are one of the few available mitigation measures that could be used to mitigate these effects. The Panel is also of the view that offsets used to help mitigate project effects would also help mitigate cumulative effects. However, Shell did not propose or support the use of conservation offsets, and none of the other participants in the hearing provided any evidence on the possible location of such offsets that would allow the Panel to assess the potential for the offsets to further mitigate the effects of the Project. The Panel therefore recommends that before other provincial and federal approvals are issued, the governments of Canada and Alberta cooperatively consider the need for conservation offsets to address some of the likely significant adverse effects of the Project. The Panel also recommends that if the governments of Canada and Alberta identify offsets as necessary, the selection and implementation of conservation offsets should consider the effects of the offsets on existing Aboriginal TLU and consider the need to maintain areas for traditional use by Aboriginal peoples, including areas containing traditional plants and other culturally important resources.

[13] With regard to the prediction of significant cumulative effects for several key indicator resources and species at risk, the Panel has determined that the Project itself only contributes incrementally to some of these effects and that most of these effects result from projects and disturbances that either currently exist or have already been approved. The Panel took a conservative and precautionary approach when making these determinations and recognizes that any determination of significant adverse cumulative effects includes some degree of uncertainty.

[14] The Panel also believes that the *Lower Athabasca Regional Plan (LARP)*, although still a work in progress, is an appropriate mechanism for identifying and managing regional cumulative effects, including the proposed biodiversity management framework and new Alberta wetlands policy (both in development). The *LARP* is an excellent and important framework for beginning to introduce a more integrated regional approach, and the Panel strongly encourages Alberta to continue to implement this regional plan. It is critical that the frameworks, plans, and thresholds identified in the *LARP* be put in place as quickly as possible. Future project reviews will benefit greatly from the completion of this regional approach.

[15] The Panel also notes that the governments of Canada and Alberta have established the *Joint Canada-Alberta Implementation Plan for Oil Sands Monitoring* in order to ensure

environmentally responsible development of the oil sands resource, and this initiative will help promote a better understanding of cumulative effects in the Lower Athabasca region.

[16] The Panel has made 88 recommendations to the federal and provincial governments (appendix 6). The Panel believes that these recommendations are important for the successful implementation of the Project and for the future development of the oil sands area. The Panel also sets out 22 conditions for Shell (appendix 5).

Summary of Key Findings

[17] While some uncertainties continue at the project level, particularly with groundwater modelling, bitumen recovery, tailings management, and reclamation, Shell stated that it will continue to use an adaptive management strategy and will work with regulators to address the uncertainties and site-specific issues associated with the mining and processing of oil sands in its lease areas.

[18] The Panel has concluded that the Project would provide significant economic benefits for the region, the province, and Canada. The Project is an expansion of an existing project and is in an area where the government of Alberta has identified bitumen extraction as a priority use. Shell stated that the Project will result in the recovery of about 325 million cubic metres of dry bitumen over its approximately 40-year life. The municipal, provincial, and federal governments will all receive significant financial benefits as a result of the Project. The Project will provide major and long-term economic opportunities to individuals in Alberta and throughout Canada, and will generate a large number of construction and operational jobs.

[19] The Panel finds that diversion of the Muskeg River is in the public interest, considering that approximately 23 to 65 million cubic metres of resource would be sterilized if the river is not diverted, and considering the low level of predicted environmental effects on water quality and quantity in the lower reaches of the river. The upper reaches of the Muskeg River to be diverted have low fisheries habitat value, and the evidence indicated only limited Aboriginal use of the area. The Panel recognizes that the relevant provincial agencies were not at the hearing to address questions about why the Project is not included in the *Muskeg River Interim Management Framework for Water Quantity and Quality*. The Panel believes that there will be significant and unacceptable sterilization of bitumen if the diversion does not occur.

[20] The Panel recognizes that Shell's proposal to eliminate mature fine tailings (MFT) from the Project's end pit lakes (EPLs) will improve current tailings management practices and could reduce potential toxicity in receiving water bodies and potential fish tainting risks. The Panel agrees with the adaptive management concept and concludes that with the implementation of Shell's proposed mitigation measures and commitments and with the Panel's conditions, expectations, and recommendations, significant adverse environmental effects are unlikely to result from the use of MFT-free EPLs. However, the Panel requires that Shell report on alternatives to treating EPLs passively and provide a comprehensive economic and technical assessment of feasible active water treatment options to ensure that EPLs will meet water quality release criteria at closure.

[21] Although the Panel has concluded that the Project is in the public interest, project and cumulative effects for key environmental parameters and socioeconomic impacts in the region have weighed heavily in the Panel's assessment. In approving this Project, the Panel has set new

approval conditions for mining operations, resource conservation, tailings management, groundwater, EPLs, and reclamation. For a summary of the new conditions, refer to appendix 5. The Panel has also made recommendations, summarized in appendix 6, to the federal and provincial governments.

Environmental Effects

[22] The Panel has concerns with some of the methods used by Shell to assess effects on terrestrial resources and Aboriginal TLU, rights, and culture. These concerns are that the local study area (LSA) consists of only the Project and existing Phase 1 footprints, that there is a lack of ecological context, and that the large size of the regional study area (RSA) adopted by Shell causes a “dilution effect.” The Panel also found it difficult to assess the significance of effects because of the coarse-scale Landsat imagery Shell used to estimate land cover type, because of the lack of use of thresholds to determine significance, and because of Shell’s consequent reliance on professional judgement.

[23] The Panel concludes that it could not rely on Shell’s assessment of the significance of project and cumulative effects on terrestrial resources. The Panel reviewed the evidence using a 20 per cent loss threshold and considered other factors relating to the reliability of Shell’s determination of the significance of effects.

[24] The Panel concludes that the Project would have significant adverse environmental project effects on wetlands, traditional plant potential areas, wetland-reliant species at risk, migratory birds that are wetland-reliant or species at risk, and biodiversity. The Panel also concludes that the Project, in combination with past, present, and reasonably foreseeable future projects, would likely result in significant adverse cumulative effects on wetlands; old-growth forests; traditional plant potential areas; wetland-reliant species at risk and migratory birds; old-growth forest-reliant species at risk and migratory birds; caribou; biodiversity; and Aboriginal TLU, rights, and culture.

[25] The Panel understands that a large loss (over 10 000 hectares) of wetlands would result from the Project, noting in particular that 85 per cent of those wetlands are peatlands that cannot be reclaimed. The Panel further understands that wetlands provide important habitat for many migratory birds and species at risk. Based on the evidence presented, the Panel could not conclude that the remaining wetlands in the RSA would be sufficient to alleviate the effects of wetland habitat loss in the LSA. The Panel concludes that the Project would have high-magnitude, long-term, and likely irreversible effects on wetlands that are in an area nearly surrounded by, and thus affected by, other existing and approved oil sands mines. The Panel has determined that due to the adverse effects on wetlands in the LSA, species that rely on these habitats would be significantly affected. The Panel finds the effects on species reliant on wetlands to be high in magnitude, regional in scope, long-term, and potentially irreversible. The Panel also finds that significant cumulative effects on wetlands and wetland dependent species are likely in the RSA.

[26] The Panel finds that there would be high-magnitude, long-term, but possibly reversible cumulative effects on old-growth forest in the far future (2165). The Panel believes that Shell’s estimation of remaining old-growth in the RSA is, at best, uncertain, and thus using the precautionary approach the Panel concludes that there would be significant cumulative effects. The Panel also believes that reclamation will not sufficiently mitigate the effects on species at

risk and migratory birds that rely on old-growth forest because of the substantial amount of time needed to re-establish habitat. The Panel has also determined that there would be significant adverse cumulative effects on species that rely on old-growth forests.

[27] The Panel finds that most of the high and moderate traditional plant potential in the LSA will be lost during the construction and operation phases and that after closure and reclamation the high and moderate traditional plant potential will decrease in the LSA by 7 and 52 per cent, respectively. Given that most of the Project area will not support traditional plants for several generations, the Panel also considers the effects to be long-term. The Panel notes that some traditional plants may never re-establish because they occur on wetlands that cannot be reclaimed. The Panel also notes that although Shell's planting prescription for achieving the desired post-reclamation range of ecosite phases includes some traditional plants, Shell largely relies on natural ingress and that there is limited opportunity to place topsoil and subsoil directly. For these reasons, the Panel finds that there would be significant adverse project effects on traditional plant potential areas. The Panel also concludes that the Project would have significant adverse cumulative effects on traditional plant potential in the RSA because of the significant levels of disturbance predicted for areas of high and moderate traditional plant potential, the long time lag between disturbance and reclamation, and the uncertainty associated with wetlands reclamation.

[28] The Panel notes that a substantial amount of habitat for migratory birds that are wetland or old-growth forest dependent will be lost entirely or lost for an extended period. The Panel finds the project effects on wetland and old-growth forest-reliant migratory birds to be moderate in magnitude, regional in extent, long-term, and potentially irreversible given that some habitat types cannot be reclaimed. The Panel concludes that these effects would be significant. The Panel further concludes that there would be significant cumulative effects on wetland and old-growth forest-reliant migratory birds, mainly as a result of the effects on habitat loss of past, present, and future projects in combination with the Project.

[29] The Panel notes that caribou, a species at risk that appears to be declining to extirpation in some herds, are traditionally and culturally important to Aboriginal people. The Panel finds that there has been and would continue to be significant adverse cumulative effects on caribou largely due to the catastrophic loss of caribou habitat from the preindustrial case (PIC) to the application case. The Panel concluded that Project effects would likely result primarily from a potential increase in predation on caribou in adjacent areas due to the increasing loss of habitat for caribou predators (e.g., wolves) within the Project LSA.

[30] The Panel has assessed the effects on biodiversity at the species, ecosystem, and landscape levels. The Panel believes that there appears to be a high potential for significant loss of biodiversity based on overall wildlife habitat loss, unproven methods for reclamation of peatlands and old-growth forest, and the long time lag between disturbance and reclamation. The Panel finds a high-magnitude, long-term, potentially irreversible effect on biodiversity at the LSA scale and concludes that it is a significant effect. The Panel also finds that there would be significant adverse cumulative effects on biodiversity in the RSA.

[31] The Panel is concerned about the lack of mitigation measures proposed for loss of wildlife habitat in the LSA that have been shown to be effective, particularly for wetland and old-growth habitat used by species at risk and migratory birds. The Panel believes that without

additional mitigation, there will be significant adverse effects on species abundance and diversity. The Panel believes that these adverse project effects, if not adequately mitigated, will contribute to adverse effects on biodiversity as well. Given the predicted declines in biodiversity in the RSA, the degree of error associated with Shell's estimates, the loss of habitat for species at risk, the uncertainty associated with habitat reclamation, and the lack of mitigation shown to be effective, the Panel finds a significant adverse effect on biodiversity in the RSA as a result of the cumulative effects of the application case and the planned development case (PDC) compared with the PIC. Despite uncertainty around appropriate thresholds to be used, the Panel believes that cumulative effects on wildlife observed in both the application case and PDC in the Project area have exceeded or are approaching some of the proposed thresholds, resulting in significant adverse effects on biodiversity. Although the Panel recognizes that *LARP* and other regulations and policies of the government of Alberta do not currently mandate the use of conservation offsets in the oil sands region, given that there are few options available for avoiding or minimizing the adverse effects of large surface mines, the Panel believes that the use of conservation offsets may be necessary.

[32] The Panel recognizes that numerous issues and challenges are related to the regional environmental effects of oil sands development. It is clear that critical issues about oil sands development are increasingly not project specific, and successful management of these issues is often not the sole responsibility of an applicant or proponent. As has been the case with other recent decisions on mineable oil sands development, many of the concerns and issues related to this proposal have to do with the pace of development of the mineable oil sands and the capacity of the regional environment to absorb these developments without creating effects that result in further development not being in the public interest. The Panel believes that a more integrated and comprehensive approach is required to adequately address cumulative effects of mineable oil sands development. While the *LARP* is an essential first step, its value will be fully realized only when all of its frameworks and thresholds are in place and being applied. The Panel encourages the government of Alberta to continue the processes associated with implementation of the *LARP* on an urgent basis.

Effects on Aboriginal Traditional Land Use, Rights, and Culture

[33] The Panel finds that the Project will result in the loss of lands and some resources used for TLU activities and that this will affect some Aboriginal people who use the Project area. The Panel finds that the mitigation measures proposed by Shell are not sufficient to fully mitigate these effects. The Panel believes, however, that project effects alone are unlikely to destroy or fundamentally alter the ability of the Aboriginal groups to practise TLU activities or to exercise their rights. The Panel therefore finds that project effects, while adverse, are not likely to be significant.

[34] In contrast, the Panel finds that project effects, in combination with the effects of other existing, approved, and planned developments and other disturbances in the region surrounding the Project are likely to result in significant adverse cumulative effects on Aboriginal TLU, rights, and culture. The Panel finds that significant areas have already been or will be lost for the purposes of TLU as a result of existing, approved, and planned activities. The Panel also finds that natural disturbances and other resources important for the practise of Aboriginal TLU, rights, and culture such as wetlands, old-growth forests, traditional plant potential areas, migratory birds, and wildlife species, such as caribou, have been or will be subject to significant

adverse cumulative effects. The Panel recognizes that disturbed areas will eventually be reclaimed, but this will not occur for many years, some types of habitat cannot be reclaimed, the landscape will be significantly altered, and some species loss may be irreversible. The long-term and possibly irreversible nature of these effects has significant implications for the sustainability of traditional ecological knowledge, TLU practices, Aboriginal and treaty rights, and culture.

[35] The Panel believes that determining the significance of project and cumulative effects on TLU and on Aboriginal and treaty rights and culture is a complex exercise that cannot be done simply by looking at the availability of the required resources and access to them. A thorough and proper assessment requires an understanding and integration of a host of issues, including effects on the availability of and access to the resources important to Aboriginal people and the combined effects of noise, odours, barriers to access, perceived contamination of resources, socioeconomic effects, cultural practices, and other factors that influence the choices of people about whether to engage in TLU activities. In addition, the number and variety of projects and activities occurring in the oil sands region, the multiplicity of TLU, rights, and cultural practices associated with the various Aboriginal groups, and a lack of consensus on the appropriate methodology and thresholds for determining when significant adverse effects on Aboriginal TLU, rights, and culture might be occurring make it challenging for individual project proponents, as well as panels such as this one, to complete these assessments. The Panel agrees with Shell and the Aboriginal groups participating in this review that completing cumulative effects assessments on a regional basis, rather than on a project-by-project basis, would be more effective and would reduce the potential for individual project cumulative effects assessments to produce inconsistent results.

[36] It is apparent to the Panel that the mitigations being proposed by individual project proponents are not effective at avoiding significant adverse cumulative effects on TLU in the Project region. The Panel acknowledges that the intent of the *LARP* is to take more of a cumulative-effects-based approach to managing environmental effects in the Lower Athabasca Region, but notes that the *LARP* does not specifically address TLU issues. Instead, the *LARP* provides for continued consultation and engagement with Aboriginal peoples to help inform land and natural resource planning in the region. Several of the Aboriginal groups expressed concern that the *LARP* does not address their concerns and does nothing to ensure ongoing traditional use of the land or to protect their Aboriginal or treaty rights. The absence of a management framework and associated thresholds for TLU makes it very difficult for Aboriginal groups, industry, and panels such as this one to evaluate the impact of individual projects on TLU. The Panel believes that to inform land use planning and allow better assessment of both project and cumulative effects on Aboriginal TLU, rights, and culture, a TLU management framework should be developed for the Lower Athabasca Region. The Panel recommends that Alberta develop and implement a TLU management framework for the Lower Athabasca region as a component of the *LARP*. The Panel recommends that the government of Alberta develop this framework with the involvement of all of the Aboriginal peoples who practise their rights in the oil sands region and who are affected by industrial development.

[37] All of the Aboriginal groups that participated in the hearing raised concerns about the adequacy of consultation by Canada and Alberta, particularly with respect to the management of cumulative effects in the oil sands region and the impact of these effects on their Aboriginal and treaty rights. In its submissions to the Panel on the questions of constitutional law, Canada and Alberta both advised the Panel that Crown consultation with Aboriginal groups was not complete

and that the Panel's report would inform the Crown's subsequent decisions about Aboriginal consultation. The Panel notes that it has determined that the Project may affect Aboriginal TLU, rights, and culture and that the cumulative effects of existing, approved, and planned development on Aboriginal TLU, rights, and culture are likely to be significant. The Panel recommends that Canada and Alberta each consider the Panel's findings in this report when it assesses the adequacy of Crown consultation that has occurred to date in relation to the Project, and when it considers what further consultation may be needed or desirable in order to complete their respective consultation obligations to affected Aboriginal groups.

Section 5 of *CEAA, 2012*

[38] Conclusions, mitigation measures, and recommendations related to section 5(1) of the *CEAA, 2012* in this report can be found in the following sections: No Net Loss Plan; Effects of Tailings Ponds on Migratory Birds; Diversion of the Muskeg River; Effects on Wetlands; Effects on Old-growth Forests; Effects on Traditional Plant Potential Areas; Effects on Wildlife and Their Habitat; Human Health; Physical and Cultural Heritage Resources; Capacity of Renewable Resources; and Effects on Aboriginal Traditional Land Use, Rights, and Culture. These sections provide the Panel's findings on

- the effects on fish and fish habitat, and migratory birds; and
- with respect to Aboriginal peoples, the effects in Canada of any change to the environment in health and socioeconomic conditions, physical and cultural heritage, or the current use of lands and resources for traditional purposes, and to any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance.

[39] Conclusions, mitigation measures, and recommendations related to section 5(2) of the *CEAA, 2012* in this report can be found in the following sections: No Net Loss Plan; Water Withdrawal from the Athabasca River; and Diversion of the Muskeg River. These sections provide the Panel's findings on the effects that may be caused to the environment and are directly linked or are necessarily incidental to a federal authority's exercise of a power or performance of a duty or function that would permit the carrying out of the project. For this Project, the federal regulatory approvals that may be issued are those required by the Department of Fisheries and Oceans and Transport Canada.