

## Regulating the Impending Lithium Boom: direct lithium extraction's place in the subsurface

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### Summary

*There is growing competition in Western Canada's subsurface as novel industries—from hydrogen to geothermal to CCS—begin their descent into what has traditionally been the domain of the oil and gas industry. One new participant, the lithium-rich brine extraction industry, has captured the attention of law and policy makers across Western Canada. In late 2021, the Government of Alberta released a new comprehensive minerals strategy and action plan and subsequently enacted the Mineral Resource Development Act. The creation of a new stand-alone legal regime provides much needed clarity for the development of the novel lithium-rich brine extraction industry in Alberta. However, significant legal questions and issues remain. The lithium industry patiently awaits the release of additional regulations and directives to determine whether its concerns will be addressed and, importantly, how the lithium industry will rank in priority among other subsurface participants.*

### Setting the Stage – Shifting Resource Dynamics

International resource markets continue to shift significantly, perpetuated by geopolitical conflicts and net-zero declarations. Critical and strategic minerals (“**CSMs**”), such as lithium, nickel and cobalt, are needed to support the electrification of new industries. The demand for CSMs continues to grow as countries and companies around the world seek to secure supplies of CSMs to support their transition goals. At the same time, pressure is mounting on both countries and companies to ensure their existing and new supply of CSMs align with an increased emphasis on environmental, social and governance (“**ESG**”) obligations.

Western Canada is an example of a jurisdiction in transition and one that can capitalize on transitions occurring elsewhere. Traditionally known for its oil and gas industry, Western Canada has recently begun to more seriously consider alternate industries alongside its well-established oil and gas industry, including helium, carbon capture and storage (“**CCS**”) and direct lithium extraction (“**DLE**”).

Western Canada's oil and gas expertise and workforce positions it well for a DLE extraction industry. Lithium-enriched brine has long been extracted as a byproduct of oil and gas operations and reinjected back into the subsurface as waste. It is not until recently that advancements in DLE technologies and high demands for lithium have resulted enriched brines being seen as an asset. Importantly, the DLE processes to be deployed in Western Canada are touted as being more environmentally friendly than the hard rock mining or large evaporation ponds currently relied on for lithium extraction.

## Alberta's New CSM Regime

Alberta has recognized the potential for a robust provincial CSM industry. In 2021, Alberta released a new mineral strategy and action plan, "Renewing Alberta's Mineral Future" (the "Action Plan"). The Action Plan highlights Alberta's intention to build out CSM industries throughout the entire supply chain. The Action Plan and its related materials specifically highlight Alberta's emerging DLE industry.

In parallel to the Action Plan, Alberta enacted the *Mineral Resource Development Act*, SA 2021, c M-16.8 (the "New Act"). The New Act intends to establish a regulatory framework for extracting CSMs in Alberta. Once in force, the Alberta Energy Regulator ("AER") will be the governing body for all CSMs extracted in Alberta.

The New Act is a promising development for the DLE industry who has suffered from regulatory uncertainty to date. For example, under the New Act, schemes, wells and facilities for DLE will be approved and licensed separately from schemes, wells and facilities for oil and gas or geothermal operations. However, although the New Act is viewed as a step in the right direction, DLE stakeholders are still awaiting additional regulations and directives enacted pursuant to the New Act that will set out the details of the new CSM framework governing DLE.

## Remaining Questions and Concerns

The below list provides a non-exhaustive summary of some of the remaining questions and concerns for the DLE industry and its stakeholders as they await the release of the more detailed CSM framework.

### 1. *Timing*

At the time of writing this abstract, the New Act has received royal assent, but has yet to come into force; there has been no indication on when proclamation will be made for the New Act. The New Act must be proclaimed before the detailed CSM framework can be established.

The Action Plan provides some guidance on the anticipated rollout of the new CSM regulatory framework, setting out Alberta's priorities in the immediate term (2 years), intermediate term (2-5 years) and long term (5-10 years). The development of the new fiscal and regulatory framework for the CSM industry is set to occur in the immediate and intermediate term.

There is already a strong domestic and international demand for new lithium sources. Manufacturers are actively seeking to secure supplies of CSMs today to support current transitions. Regulatory uncertainty is an impediment for DLE investors and industry stakeholders. It is imperative that Alberta's new CSM regulatory framework be developed and enacted in the near-term to ensure that Alberta is able to capitalize on current market opportunities.

### 2. *Mineral Ownership*

In Alberta, a mineral lease is required under the *Metallic and Industrial Minerals Tenure Regulation* to recover lithium. A mineral lease granted by the provincial crown is the dominant

form of mineral disposition in Alberta, since the provincial crown owns around 80% of the province's mineral resources. Alternatively, on the remaining private lands, Mineral Lease Agreements govern the disposition of lithium resources.

There are possible concerns with the language used in historical dispositions being relied on for DLE extraction. Many historical dispositions would not have been drafted with an understanding that there is value to be extracted from subsurface brines. Concerns are heightened on lands with multiple mineral dispositions for the same land. It is possible that the language in two dispositions governing the same land can both be interpreted as including the rights to extract lithium.

The interpretation of historical dispositions for newly valued resources is not new. For decades, coalbed methane ("CBM") was valueless. As this changed, companies began to coproduce CBM along with oil and natural gas. Disputes arose between the owners of coal dispositions and natural gas dispositions on lands where the coal and natural gas mineral disposition was split. These CBM disputes were ultimately resolved in Alberta through legislation, with the legislature explicitly enacting that CBM is, and at all times to has been, natural gas.

The New Act does not explicitly address potential conflicts regarding who owns lithium should a dispute arise based on pre-existing dispositions. To provide clarity to stakeholders, the drafters of the new CSM framework may need to consider adopting the approach taken for CBM. Unless and until such clarity is provided by the legislature, DLE project proponents and stakeholders will continue to take extra care in confirming their mineral rights.

### *3. Priority of Subsurface Participants*

DLE operations may interact or impact other subsurface participants, such as CCS, helium, geothermal and oil and gas operations. The New Act does not provide clarity on overlapping or conflicting subsurface rights as between various subsurface participants. It does, however, provide Alberta's cabinet with the ability to regulate subsurface priorities in the event of a conflict. It remains to be seen whether cabinet will exercise its authority to develop such regulations.

To date, the AER has been responsible for deciding conflicts between multiple subsurface participants. The AER will retain this responsibility in undertaking the governance of CSMs through the New Act. Historically, in deciding conflicts, the AER has considered (1) the relative benefits of each project and (2) whether the conflict is between a non-resource project and a resource-based project. Since the AER's statutory mandate is to make decisions in the public interest, it has often favoured extraction operations in the event of a conflict.

Without clarity on subsurface priority from cabinet, the convergence of new subsurface participants will test the AER's ability to determine subsurface conflicts – particularly when the conflict is between traditional and novel extraction projects (e.g. an oil and gas operation and a DLE operation). In making its determination in the public interest, the AER will need to consider changing market, investor and public opinions, including the need for energy diversification in Alberta, the increasing demand for CSMs, the investor-driven focus on ESG factors, and the creation of new jobs and support of novel industries. Navigating shifting resource dynamics and investor and public priorities is complex and may appropriately fall outside the AER's domain.

#### 4. *Tenure and Royalty*

The current tenure and royalty regime governing the DLE industry was not drafted in contemplation of the DLE industry. Under the *Metallic and Industrial Minerals Tenure Regulation*, exploration permits are granted for fourteen (14) year terms. To maintain a permit, permit holders must meet minimum spending requirements for their resource assessment work. The minimum spending requirements increase aggressively over the first few years of the term; the spending minimums are \$5 per hectare for the first two years, \$10 per hectare for the next two years, and \$15 per hectare for the remaining of the permit term.

The problem with the current tenure framework is that lithium extraction requires a DLE developer to hold permits over large reservoirs – brine concentration in Alberta is low and large amounts of brine are necessary to make DLE economically feasible. The DLE Industry, which is still an emerging industry, has raised concerns with the costs of maintaining their permits. Industry has advocated for changes specific to lithium permits, including decreasing the minimum spending requirements, drawing out the increase in spending requirements over a longer period of time, or expressly including the development of DLE technologies as a qualified expenditure for the purpose of calculating minimum spending requirements.

Similar concerns exist for DLE under the *Metallic and Industrial Minerals Royalty Regulation*. It is unclear exactly what royalty rate applies for lithium extracted by DLE. The creation of separate royalty rate based on the extraction of lithium from brines would provide needed clarity to stakeholders. A distinct royalty rate would also be able address the uniqueness of DLE, such as a better accounting of the high processing costs for DLE.

The New Act is silent on tenure or royalties, which is not surprisingly seeing as these topics are often governed through regulations. The Action Plan states that metallic and industrial mineral tenure will be reviewed and updated within two years. The royalty framework update is not set to occur for another two to five years.

#### 5. *Reusing Existing Infrastructure and Co-Production*

Finally, many of the prime locations for DLE exist in depleted oil and gas fields. The co-location of lithium rich reservoirs and existing oil and gas infrastructure increases the possibility of using some existing oil and gas infrastructure for DLE operations. In particular, it may be possible to drill wells for DLE from abandoned well pads or rely on existing pipes. In addition, DLE offers a few co-production opportunities, including geothermal, agricultural water, potable water, oil and gas, strontium sulphate, bromine, thorium and zinc.

The New Act does contemplate the use of preexisting infrastructure for a DLE operation. For example, wells and facilities initially licensed for oil and gas extraction or geothermal can be redesignated as a well or facility under the New Act. However, without further regulatory clarity, the DLE industry will likely remain hesitant in using pre-existing infrastructure as the New Act suggest that doing so will require the DLE operation to assume any associate liabilities with that infrastructure. Co-production has also not been contemplated in detail in the New Act and will need to be built out further in the forthcoming regulations or directives if such coproduction is to be encouraged.

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