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October 16, 2015

**RTS 595**

Sent via e-mail: [AEREnvironmental.Assessment@aer.ca](mailto:AEREnvironmental.Assessment@aer.ca)

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Suite 1000, 250 – 5<sup>th</sup> Street SW  
Calgary, Alberta T2P 0R4

Dear Sirs:

**Re: Written Comments on Proposed Terms of Reference (“PTOR”) for Imperial Oil Resources Limited (“IOR”) Cold Lake Midzaghe Project (the “Project”) Located within Cold Lake First Nations Traditional Territory, Treaty No. 6**

We write on behalf of Cold Lake First Nations, Treaty No. 6 (“CLFN”) in response to the Public Notice regarding IOR’s PTOR for the above noted Project. We acknowledge the extension granted to CLFN to provide these comments by October 16, 2015

The Project is planned for construction within CLFN’s Traditional Territory, *Denne Ni Nenne* (“Our Land”) and within close proximity our English Bay Reserve Lands (Reserve 149B). The Project area is rich with history and our members have been exercising their Treaty and Aboriginal Rights in this area since time immemorial. Local archaeological digs proximate to the Project have demonstrated an unbroken pattern of use and occupancy in the area for over thousands of years.<sup>1</sup> Our members continue to use the Project area for the exercise of their Treaty and Aboriginal rights, including the rights to hunt, fish, trap and gather plants and resources. In addition, the Project is located close to our Reserve Lands where many of our members live.

Since the 1950’s our Nation members have been impacted both individually and collectively by the taking up of lands, industrialization of the local environment and shifting economies which have had a profound effect on the social structure and culture of our community. Our environment, culture, economy and society have been impacted by IOL developments for decades. IOR’s operations have had a permanent and negative impact upon our community, our economy, and our culture and we do not believe that the impacts of Imperial Oil’s operations on CLFN have been comprehensively examined, tested or understood through previous Environmental Impact Assessments (“EIAs”).

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<sup>1</sup> See HRIA Report English Bay Recreation Area

Accordingly, we have many concerns about impacts that we expect will occur or increase as a result of IOR's newest Project and we want to ensure our community has the information it needs to fully assess this Project. These concerns can be categorized as follows:

- 1) Project-specific and cumulative impact to the ability of our members to freely exercise their Treaty and Aboriginal Rights within *Denne Ni Nenne*—including concerns about impacts to environmental conditions that are necessary for the exercise of those rights such as the quality and quantity of ground and surface water, fish, plant and wildlife populations and habitats, etc.;
- 2) Project-specific and cumulative impacts upon the nature and quality of our Reserve lands, waters, resources and our English Bay Reserve community situated; and
- 3) Project-specific and cumulative impacts upon the social structure, economy and culture of CLFN.

We are hopeful that the AER will take CLFN's comments and concerns into account and work with our Nation to craft Terms of Reference that will guide the Environmental Assessment ("EA") process such that it results in an EIA that is comprehensive, fair and rigorous and which meets the mandate and purpose of the *Environmental Protection and Enhancement Act* (emphasis added) including:

#### **Purpose of Act**

2 The purpose of this Act is to support and promote the protection, enhancement and wise use of the environment while recognizing the following:

(a) the protection of the environment is essential to the integrity of ecosystems and human health and to the well-being of society;

(b) the need for Alberta's economic growth and prosperity in an environmentally responsible manner and the need to integrate environmental protection and economic decisions in the earliest stages of planning;

(c) the principle of sustainable development, which ensures that the use of resources and the environment today does not impair prospects for their use by future generations;

(d) the importance of preventing and mitigating the environmental impact of development and of government policies, programs and decisions;

(e) the need for Government leadership in areas of environmental research, technology and protection standards;

(f) the shared responsibility of all Alberta citizens for ensuring the protection, enhancement and wise use of the environment through individual actions;

(g) the opportunities made available through this Act for citizens to provide advice on decisions affecting the environment;

Enclosed please find a report entitled “*Review of the Proposed Terms of Reference for the Imperial Oil Resources Ltd. Proposed Cold Lake Midzaghe SA-SAGD Project*” prepared by Management and Solutions in Environmental Science (the “MSES Review Report”). The MSES Review Report provides an independent review of the PTOR and makes discipline specific requests and recommendations where appropriate. All requests and recommendations proposed in the MSES Review Report are required by CLFN in order to ensure a comprehensive, fair and vigorous investigation of impacts with a focus on key concerns as outlined by CLFN.

In addition to the recommendations arising from the MSES Review Report, CLFN offers the following comments and recommendations which will assist in ensuring our interests are adequately investigated.

## **PTOR Section 2 PROJECT DESCRIPTION**

### **Section 2.1 OVERVIEW**

**[C] Concern:** Requires IOR to “*discuss the implications of a delay in proceeding with the Project, or any phase of the Project, or not going ahead with the Project*”. In CLFN’s experience, project Proponents do not carefully examine or respond to this question.

**Recommendation:** CLFN would like to see a requirement for IOR to present both positive and negative implications of a delay in the Project. For example, what are the positive environmental and economic benefits in delaying the Project to allow for reclamation of other areas currently taken up by IOR and other operators? Are labour shortages expected to continue? Could the influx of more temporary workers from outside the Region be minimized or prevented by delaying the Project? Could technologies be significantly improved to reduce impacts of the Project if the bitumen remains in place? In other words, are there potential improvements to current environmental conditions and/or improvements to intergenerational equity that should be considered in assessing the “implications of a delay”.

**[D] Concern:** Requires IOR to discuss the benefits of the Project including local jobs created, local training, employment and business opportunities, and royalties and taxes generated that accrue to:

- a) Imperial Oil
- b) local and regional communities, including Aboriginal communities
- c) the local authority
- d) Alberta; and
- e) Canada

**Recommendation:** In addition to providing the standard explanation and calculation of potential benefits in absolute terms (e.g. \$X of royalties to Alberta), CLFN believes it is important to understand the potential benefits within the overall economic context. For example, CLFN believes that to understand the economic benefits arising from Royalties, these should also be expressed as a function of percentage (e.g. if the Project is constructed, what will be the percentage increase in overall royalties to Alberta). This is considered to be similar to how IOR is expected to measure environmental impacts (e.g., the Project will only take up x% of *Denne Ni Nenne*) and will provide the AER with a better understanding of whether and how much the various parties are expected to benefit from the Project in the overall, cumulative economic context.

**[E] Concern:** IOR is required to provide the adaptive management approach that will be implemented throughout the life of the Project.

**Recommendation:** IOR has been operating in *Denne Ni Nenne* for decades. IOR should have sufficient data from its existing projects to demonstrate specific instances in which adaptive management approaches have been implemented and to demonstrate whether those specific approaches have been successful in mitigating or avoiding the impacts of its operations. CLFN requests that the TOR require IOR to report on the success and failure of past adaptive management approaches in order to provide AER with the necessary information to assess whether those approaches are reliable.

## **PTOR Section 2.8 CONSERVATION AND RECLAMATION**

CLFN is deeply troubled by the lack of information available in EIAs regarding reclamation and closure plans. Currently, there is no Alberta Policy, AER Directive, or other regulatory requirement to consult with or engage with First Nations at the time of reclamation planning. Current regulatory standards for reclamation are intended to return the land to “equivalent land capability” but even in the best case scenarios it takes decades after the issuance of reclamation certificates for the land to be restored to a state in which it may be possible to exercise Treaty and Aboriginal Rights. EIAs in Alberta typically include an assumption that reclamation will ultimately restore the land and environment to a point at which Treaty and Aboriginal Rights will no longer be impacted. This assumption is often unsubstantiated. In CLFN’s experience, this results in the overall underestimation of the long term impacts associated with projects on the environment, wildlife populations and the exercise of Treaty and Aboriginal Rights. To date there has been little study of the effectiveness of reclamation efforts in Alberta (in general) or the effectiveness of reclamation efforts on restoring land for the purposes of the exercise of Treaty and Aboriginal Rights.

**Recommendation:** In addition to the requirements described in the PTOR, CLFN would like to see IOR investigate and report on the following topics:

- 1) State of reclamation of current IOR projects—what methods have they been using, have they been effective, what is the current state of knowledge of the effectiveness of reclamation activities in Alberta from an ecological perspective.
- 2) What is the current state of knowledge of the effectiveness of reclamation activities in Alberta (or elsewhere) in regards to ensuring the availability and usefulness of “reclaimed lands” for the exercise of Treaty and Aboriginal Rights?
- 3) How will “progressive reclamation” specifically minimize impacts to Treaty Rights and Traditional uses? i.e. Provide modelling which demonstrates progressive reclamation actually improves opportunities for the exercise of Treaty and Aboriginal Rights over the lifespan of the Project.

### **PTOR Section 3 ENVIRONMENTAL ASSESSMENT**

**Concern:** The process of environmental assessment is conducted at a Regional and Local Study level which minimizes or obscures potential impacts to *Denne Ni Nenne* and English Bay Reserve.

**Recommendation:** As noted above, IOR should be required to incorporate Traditional Ecological Knowledge into all aspects of its studies and to consult with CLFN when delineating the local and regional study areas. In addition, IOR should be required to examine and report on whether there are expected to be any specific impacts to *Denne Ni Nenne* and English Bay Reserve arising from Project.

### **CAPROCK INTEGRITY AND GEOMECHANICS**

**Concerns** CLFN has many concerns regarding risks associated with caprock instability stretching from the Fort McMurray oil sands to the Cold Lake area resulting in events such as the CNRL Primrose releases. Similarly, CLFN is concerned about well bore integrity during drilling, running casing, cementing and during steam/ solvent injection operations, which were a further factor in CNRL’s Primrose releases.

As noted in the MSES Review Report many issues related to caprock integrity and geomechanics are not adequately addressed in the current PTOR. CLFN views it as essential to the overall understanding of the potential risks and impacts of IOR’s Project to investigate and understand these issues.

### **CONCLUSION**

We are hopeful that the AER will take these overall comments from both CLFN and MSES into account and work with our Nation to craft Terms of Reference that will guide the development of an Environmental Impact Assessment (“EIA”) which is comprehensive, fair and rigorous. There

are numerous areas to improve the TOR to ensure CLFN concerns are addressed. Please provide a comparison of the pTOR document and final TOR to show how the recommendations and requests put forward by CLFNs were considered in the preparation of the final ToR for the proposed Project. A track change version of the final ToR that shows the additions, deletions, or revisions that were made would be ideal.

Yours truly,

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# **Review of the proposed Terms of Reference for the Imperial Oil Resources Ltd. proposed Cold Lake Midzaghe SA-SAGD Project**

## **Cold Lake First Nations**

October 2015

Prepared by



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### ACRONYM LIST

AB	Alberta
ACO	Aboriginal Consultation Office
AEMERA	Alberta Environmental Monitoring, Evaluation, and Reporting Agency
AENV or AE	Alberta Environment
AEP	Alberta Environment and Parks
AER	Alberta Energy Regulator
AESRD	Alberta Environment and Sustainable Resource Development
BMF	Biodiversity Monitoring Framework
bpd	Barrels per day
C&R Plan	Conservation and Reclamation Plan
CCME	Canadian Council of Ministers of the Environment
CEA	Cumulative Effects Assessment
CEAA	Canadian Environmental Assessment Agency
CEMA	Cumulative Environmental Management Association
CLAWR	Cold Lake Air Weapons Range
CLFN	Cold Lake First Nations
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CPF	Central Processing Facility
dba	Decibel
DOC	Dissolved Oxygen Concentration
EA	Environmental Assessment
EC	Environment Canada
EIA	Environmental Impact Assessment
EPEA	<i>Environmental Protection and Enhancement Act</i>
FTS	flow to surface, i.e. fluids within the reservoir escape to surface
GMP	Groundwater Monitoring Plan
GoA	Government of Alberta
HRIA	Historical Resources Impact Assessment
JRP	Joint Review Panel
LARP	Lower Athabasca Regional Plan
LSA	Local Study Area
MAD	Mean Annual Discharge
M	Metre

m <sup>3</sup>	cubed metres
mg/L	milligrams per litre
MSES	Management and Solutions in Environmental Science
NEB	National Energy Board
PAC	polycyclic aromatic compounds
PAH	polycyclic aromatic hydrocarbons
pToR	Proposed Terms of Reference
TEK	Traditional Ecological Knowledge
ToR	Terms of Reference
TR	Traditional Resource
TLU	Traditional Land Use
TSS	total suspended solids
RSA	Regional Study Area
SA-SAGD	Solvent Assisted Steam Assisted Gravity Drainage
SAR	Species at Risk
VC	Valued Component
WQI	Water Quality Index (Indices)
ZOI	Zone of Influence
%	Percent
>	greater than
<	less than

## 1.0 Introduction

The Cold Lake First Nations (CLFN) requested that Management and Solutions in Environmental Science (MSES) conduct an independent review of the proposed Terms of Reference (dated July 24, 2015) (pToR) for the Imperial Oil Resources (Imperial) proposed Cold Lake Midzaghe Solvent Assisted-Steam Assisted Gravity Drainage (SA-SAGD) Project (the proposed Project). MSES has previously reviewed Terms of Reference (ToRs) and provided comment to the Government of Alberta (GoA) and proponents for numerous projects in the Alberta Oil Sands region and used this experience to compare and contrast the Imperial pToR with other earlier ToRs, with a focus on key concerns as outlined by CLFN. Additionally, our comments and recommendations below are based on over 20 years of experience in conducting environmental assessments and reviewing Environmental Impact Assessments (EIAs) and other regulatory submissions associated with development in the Alberta Oil Sands Region. MSES reviewed the pToR and associated available information about the proposed Project and identified gaps and issues to be addressed by GoA and Imperial. For 15 technical disciplines, experts made specific recommendations, where appropriate, on how to address the gaps/issues that are identified in the pToR, and provided comment on how to improve the pToR in order to incorporate CLFN concerns.

Direct quotes from the Imperial pToR are presented below in *italics*. The format for providing comments on ToR, as outlined in the Alberta Environment 2010 Guide to Providing Comments on Proposed Terms of Reference, including providing detailed rationale for the suggested changes, was used where possible.

### 1.1 The Proposed Project

Imperial is seeking approval for the proposed Project which is to be located on Crown land, approximately 23 kilometres northwest of the city of Cold Lake, Alberta, on Imperial's Cold Lake oil sands lease. The proposed Project is an in-situ oil sands project that will use SA-SAGD to recover bitumen from the Grand Rapids Formation. Imperial is seeking approval for an annual average production capacity of up to 55,000 barrels per day (bpd) of crude bitumen, with an estimated life of 25 to 30 years. The proposed Project will require infrastructure including, but not limited to: a central processing facility (CPF), well pads and associated sites for water source and waste disposal, pipelines (water, fuel gas, produced oil, steam injection and diluent/condensate supply), electrical power lines and access roads. Imperial will prepare and submit an EIA report that examines the environmental and socio-economic impacts resulting from the Project based partly on the criteria outlined in the final ToR.

### 1.2 Cold Lake First Nations

The Imperial Cold Lake operations are North America's largest and longest running in-situ operations in Canada. MSES has been informed that despite extensive development by Imperial in the Cold Lake region since the 1990s, CLFN maintain that a thorough assessment of impacts to their Treaty and Aboriginal Rights in relation to Imperial's Cold Lake developments has not been completed to date. Importantly, because of the presence of the Cold Lake Air Weapons Range (CLAWR), CLFN traditional land use activities in this region are already heavily restricted. MSES has also been informed that the proposed Project is within the only continuously occupied, intact ancestral lands that remain available for CLFN

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members to exercise and maintain customs, practices, and traditions. Additionally, the proposed Project is close to CLFN Reserve lands, in particular Reserve 149B (English Bay). The location of this proposed Project makes a comprehensive and scientifically rigorous assessment of potential impacts to CLFN Reserve lands and traditional lands critical for this Project.

Participating in the Project regulatory process at an early stage, by reviewing the pToR and providing comprehensive comments to the proponent and GoA, is a critical opportunity for CLFN to have input into the Environmental Assessment (EA) planning approach, methodology, and management programs for the proposed Project. The Project pToR is written using generalized language and vague terms that are subject to interpretation and will likely affect the design and implementation of the EIA. MSES has provided discipline-specific recommendations throughout this report on how to improve the pToR, and it is hoped this will inform meaningful consultation and thorough assessment regarding impacts to CLFN Treaty and Aboriginal Rights in relation to Imperial's Cold Lake developments.

**General Recommendation:**

Please provide a comparison of the pTOR document and final ToR to show how the recommendations and requests put forward by CLFN were considered in the preparation of the final ToR for the proposed Project. A track change version of the final ToR that shows additions, deletions, or revisions would be ideal.

## 2.0 Overarching Review Findings - Imperial Midzaghe pToR

1. According to the GoA, the purpose of the Standardized ToR for oil sands projects in Alberta is to identify for proponents, Aboriginal communities, and appropriate stakeholders, the information that is required by government agencies for an Environmental Impact Assessment (EIA) report prepared under the *Environmental Protection and Enhancement Act* (EPEA) (AESRD 2013). GoA also states that: ToRs are intentionally broad and inclusive in scope rather than prescriptive and narrow; EIA reports are conceptual level documents; and detailed project-specific information is provided in the regulatory approval applications rather than the EIA (AE 2010). For these reasons, the information that is required by impacted Aboriginal communities, such as CLFN, does not typically appear in EIA Reports. The Standardized ToR for oil sands projects in Alberta have repeatedly been deemed incomplete and ineffective by not only First Nations, but also Joint Review Panels and by the Office of the Auditor General of Canada. An example of a major flaw in developing ToRs in the oil sands region is aptly described by the Office of the Auditor General of Canada (2011, p. 76):

*“that the terms of reference issued to proponents of oil sands projects from 1999 to 2007 were generic and did not change from one project assessment to the next. ... In our opinion, federal authorities should have used the sound management practice of adapting terms of reference over time in order to address identified gaps in information being provided to them.”*

Additionally, the Joint Review Panel (JRP) convened in 2013 for the Shell Jackpine Mine (JPM) Expansion project was not satisfied with the information that Shell provided in its EIA, despite Shell's claim that it satisfied the ToR (JPM-JRP 2013). In other words, the ToR that Shell followed did not lead to an assessment that was satisfactory to decision makers. In this case, a proponent was poorly served by the use of the GoA Standardized ToR. Despite these concerns, the pToR for the Imperial Midzaghe Project is based upon the Standardized ToR for oil sands projects in Alberta. The concerns, requests, and feedback provided by First Nations on previous ToR reviews have similarly led to no discernible improvement in the pToR. Consequently, the draft pToR for the proposed Project is unlikely to lead to an accurate assessment of impacts to CLFN.

2. As per the Guide to Providing Comments on Proposed Terms of Reference (AE 2010), the proposed Project is unique in a number of ways in terms of socioeconomic and environmental setting resulting in the need for the GoA to write a project-specific ToR that is different from other projects in the sector. According to the list provided in the Guide to Providing Comments on Proposed Terms of Reference, unique features that can require a project-specific ToR include: proximity to communities, proximity to parks and protected areas or areas with other designations, and proximity to areas of special significance to First Nations and Aboriginal communities. Given CLFN's immediate proximity to the Project Area, their past and present extensive use of the Project Area, their identification of the Project Area as a key location for present and future land use and exercise of their Treaty and Aboriginal Rights, impacts to CLFN must be individually, thoroughly and accurately assessed in the EIA. Also, due to proximity to a Reserve (149b), there is a need to ensure that the pToR includes assessment criteria that will consider impacts specific to Reserve lands and will ensure that the monitoring will be scientifically rigorous enough to detect changes that could impact CLFN's use and enjoyment of Reserve lands. As written, the current pToR will not achieve this. It is recommended

that the GoA incorporate the comments contained within this report into the Imperial Final ToR, but also consider changes to the Standardized Terms of Reference for future projects in Alberta.

3. MSES understands that an EIA is viewed by GoA simply as a ‘conceptual level document’ outlining anticipated impacts of a project, proposed mitigation and monitoring programs, and a conceptual reclamation plan. MSES further understands that GoA does not require an EIA to present detailed environmental management plans because a greater level of detail is expected to be obtained during the approvals phase of a project. However, contrary to this expectation, MSES has found that throughout the project assessment and/or approval process, baseline data collection and monitoring programs of the required scientific rigour needed to thoroughly test EIA predictions and the effectiveness of mitigation are rarely, if ever, required by GoA. This is a fundamental flaw in the current process and an increased level of specificity in the ToR is required, including establishing benchmarks, targets and thresholds against which future monitoring results would be compared so as to assure that residual impacts are at or below predicted levels. Imperial is already aware of many of the issues and concerns associated with Standardized ToR as per reviews completed previously by MSES on behalf of other First Nations in Alberta, such as the Imperial Aspen EIA pToR in October 2013. Further, Imperial has been operating in the Cold Lake area for over 20 years and should be able to provide many of the project-specific details and concrete examples requested in this review, such as demonstrating that the proposed mitigation measures have worked at other comparable projects in the region.

## **References**

- Alberta Environment and Sustainable Resource Development (AESRD), 2013. Standardized Terms of Reference - Updated January 2013. Environmental Assessment Team, Alberta Environment and Sustainable Resource Development, Edmonton, Alberta. EA Guide 2009-1. 1 p.
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- Office of the Auditor General of Canada (2011). Report of the Commissioner of the Environment and Sustainable Development: Chapter 2 Assessing Cumulative Environmental Effects of Oil Sands Projects. [http://www.oag-bvg.gc.ca/internet/English/parl\\_cesd\\_201110\\_e\\_35765.html](http://www.oag-bvg.gc.ca/internet/English/parl_cesd_201110_e_35765.html)

### 3.0 Air Quality and Climate

<b>1. Odour management</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015), Section 2.5[B]a)m Air Emissions Management; Section 3.1.2[A] Air Quality Impact Assessment
<b>Preamble:</b>	<p>Odours are only referenced in the pToR with respect to Emissions Management, and only with respect to quantifying fugitive emissions. Odours may result from a number of factors including:</p> <ul style="list-style-type: none"> <li>- large accidental releases that are not a specific part of the management plan;</li> <li>- fugitive releases that are part of the management plan; or</li> <li>- general operations that are not a specific part of the management plan.</li> </ul> <p>Fugitive emissions are one of the generalized sources of odours from the proposed oil &amp; gas operations incorporating vapours and liquids leaks and spills. Odours may also result from regular venting (small tank breathing), poor flaring combustion in high winds, storage and handling of materials, and poor house-keeping of the Central Processing Facility (CPF) or smaller sites. Although Alberta (AER 2014) has introduced new legislation relating to venting and odours, the focus of the legislation is on industry versus residential venting and odours, as opposed to industry versus environmental concerns (i.e., fenceline). Because the lands surrounding the proposed Project are important to CLFN and are used regularly for the practice of Rights, the effective management (i.e., absence) of odours at fenceline is critical for CLFN health and well-being. Therefore, the pToR should better reflect the importance of impacts resulting from odours on Aboriginal land users, whether near populated areas or not.</p> <p><b>References</b>          Alberta Energy Regulator (AER). 2014. Hydrocarbon Odour management Protocol for Upstream Oil and Gas Point Source Venting and Fugitive Emissions. June 2014. <a href="https://www.aer.ca/documents/directives/D060_OdourManagementProtocol.pdf">https://www.aer.ca/documents/directives/D060_OdourManagementProtocol.pdf</a></p>
<b>Request:</b>	<p>a) Section 2.5[B]m) refers to the management of fugitive emissions, but criteria should be added to the ToR that requires Imperial to provide details regarding the scope or level of effort to be used in the odour assessment.</p> <p>b) Please include in Section 3.1.2[A] a requirement for Imperial to address odours specifically, similar to the requirement for the management of noise. Please add to Section 3.1.2[A] the following criteria: “g) discuss the design, construction and operational factors to be incorporated into the Project to comply with the AER’s <i>Directive 60: Odour Management Protocol</i>.”</p>
<b>2. Impact assessment for air quality</b>	
<b>Reference:</b>	No reference – pToR deficient
<b>Preamble:</b>	The pToR in its current form will not result in an EIA that comprehensively addresses the requirements for a comprehensive air quality assessment, as requested by CLFN.



<b>Request:</b>	<p>In addition to the air quality criteria outlined in the pToR, Imperial should also be required to include the following:</p> <ol style="list-style-type: none"><li>1. <b>Context of the Guidelines and Objectives</b> - In addition to a listing of the objectives and guidelines used in the assessment, Imperial should also provide a descriptive context and comparison to other Canadian or global end-points. The context should include a discussion of whether the end-point is a modelling threshold or a measured threshold, allowable exceedances of the threshold, and a description of the threshold target (being environmental, health, or socio-political).</li><li>2. <b>Fenceline:</b> The fenceline is a regulatory definition that distinguishes between on-site and off-site air quality regulations and, as such, the CPF fenceline must be clearly defined. The fenceline is important with respect to First Nations traditional territories impacted by the project since their Rights may be exercised up to the fenceline. Therefore, Imperial's ability to meet the air quality objectives at the fenceline and to be odour free at the fenceline are important to protection of First Nations Rights for the Application case and cumulative effects.</li><li>3. <b>Air Quality Monitoring Review</b><ol style="list-style-type: none"><li>a. Regional Monitoring data<ol style="list-style-type: none"><li>i. The review of the regional monitoring data should include the same end-points that are extracted for additive background value used in the dispersion modelling.</li></ol></li><li>b. Facility (on-site) monitoring data should include:<ol style="list-style-type: none"><li>i. Data trends including a description of why trends are going up or down.</li><li>ii. Record of leaks, accidents, and other releases.</li><li>iii. Flaring event frequency and quantity.</li><li>iv. Trends in facility production rates, H<sub>2</sub>S contents in flared gas, and total sulphur release rates.</li><li>v. An objective review of fugitive emission sources, including:<ol style="list-style-type: none"><li>1. Measurements of rates</li><li>2. Identification of sources</li><li>3. If there are any odours, identification of fugitive sources</li></ol></li></ol></li><li>c. Background value(s) used by Imperial to represent the additive concentration to the air dispersion modelling predictions to represent sources need to be included:<ol style="list-style-type: none"><li>i. If the study area is large, describe how representative the background value is for all locations in the study area:<ol style="list-style-type: none"><li>1. For instance, the southern part of the typical Athabasca Oil Sands study area would be expected to be impacted by the large emissions from the Edmonton/Fort Saskatchewan industrial area;</li></ol></li></ol></li></ol></li></ol>
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	<p>whereas, the north part of the study would be influenced less so.</p> <ol style="list-style-type: none"> <li>2. Background ozone (used for the conversion of NO<sub>x</sub> to NO<sub>2</sub>) may change across the study area. Imperial needs to describe how that change may affect the predictions and compliance with NO<sub>2</sub> objectives.       <ol style="list-style-type: none"> <li>ii. Provide statistics on the selected background value(s) for context. For example: provide peak, 99<sup>th</sup>, 90<sup>th</sup>, mean (is representative of long-term dose), median (is representative of typical value), and geometric mean (is representative of delivered dose), for the last 5-years of available data.</li> </ol> </li> </ol> <p><b>4. Use a Minimum of 5 modelling scenarios:</b></p> <ol style="list-style-type: none"> <li>a. Existing Case: The predictions from modelling for the existing case should be compared to existing monitoring data. Deficiencies in the dispersion modelling (meteorology, source characterization, or dispersion modelling switches) should be described. The necessary changes in the modelling for the existing case should be adjusted so that an appropriate agreement is achieved between the modelling and the existing monitoring data. Differences between the modelling and data should be understood and clearly described including: emissions included, emission omitted, time frame (hourly, daily, long-term), and anthropogenic vs. environmental sources or episodes. If the modelling does not provide adequate agreement, this should be deemed unacceptable. It is not acceptable for the modelling predictions to over-estimate the monitoring data without explanation and adjustment, since that modelling is not representative.</li> <li>b. Baseline Case: An explanation of the gap between the Existing Case and the Baseline Case should include a discussion of which emissions were included, omitted, and the time frame considered (hourly, daily, long-term).</li> <li>c. Application Case: An explanation of the gap between the Baseline Case and the Application case should include a discussion of which emissions were included, omitted, and the time frame considered (hourly, daily, long-term).</li> <li>d. Project Alone Case: It is important to clearly understand the scope and extent of expected impacts and the contribution of the proposed Project vs existing or baseline emissions. The Project Alone Case is important for each parameter assessed in the EIA: SO<sub>2</sub>, NO<sub>2</sub>, expected odours, deposition, fine particulates and coarse particulates.</li> <li>e. Planned Development Case: The results of the Planned Development Case should be discussed in terms of regional cumulative effects management. Imperial should provide context for the relative accuracy of the emissions or otherwise time (short-term, long-term, accidents,</li> </ol>
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	<p>or individual projects life function) dependency of the emissions and the resultant air quality. Imperial should discuss whether the emissions are more representative of expected annual loads or short-term loads. Imperial should provide context on the change of air quality predictions from Existing Case. Imperial should describe how the air quality compares with other regions of Alberta, Canada, or globally including remote or populated areas. The acceptability of a single project may be impacted by minute changes in cumulative effects because a threshold line must be made that cannot be crossed at any cost. Alternatively, trade-offs of environmental or health degradation must be agreed upon.</p> <p>5. <b>Visibility:</b> Imperial should include both visible blight (how far away might a person see or be otherwise impacted by visible emissions from the facility) and visible path degradation (the loss of visible distances in study area). A comparison and description of, at minimum, the Existing Case, Baseline Case and Planned Development Case should be used to evaluate cumulative impacts and acceptability to CLFN of the Project changes on visibility.</p> <p>6. <b>Material Balance:</b> Imperial's facility material balance should include a description and quantification of the sulphur coming from the formation (liquid and gas components), how that sulphur is accounted for in the emissions (short-term and long-term), and requested emissions approval levels. The sulphur material balance should also be reflected in the planned and un-planned flaring cases for short-term and long-term flaring.</p> <p>7. <b>Particulates:</b></p> <ul style="list-style-type: none"><li>a. The EIA should include an assessment and management plan for coarse particulates (including all project affected paved and unpaved roads) and regional context. If possible, provide maps and expected road traffic intensity and resultant project affected emissions intensity.</li><li>b. Estimate for distance of expected impacts from roadways (buffer) and estimate for timing and frequency of expected impacts with respect to traditional harvesting activities.</li><li>c. Fine particulate predictions are impacted by many non-modelled sources such as forest fire. Please provide context for the modelling predictions on the gap between what is included in the modelling and what potential monitoring may include for daily or long-term episodes.</li></ul> <p>8. <b>Metals, PAH and diesel emissions (particulates)</b> are important environmental and health concerns for air quality and deposition. Imperial should provide context on the expected emissions of these parameters and the relative confidence in the emission estimates and modelled impacts. Context may include comparison of proposed Project emissions compared to other non-project emissions source(s) within the region, Alberta, Canada or Globally for remote areas or populated areas.</p>
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	<p>9. <b>Context for Project Emissions:</b> The emission rates for the Project may vary over the life of the Project as production rate or other influences change. Imperial should provide time lines of the various emissions rate over the life of the Project and describe the modelling predictions in context with the modelled emissions rates.</p>
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## 4.0 Noise

<b>1. Noise receptors</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Air Quality, Climate and Noise, Impact Assessment; Section 3.1.2[C].
<b>Preamble:</b>	AER's <i>Directive 038: Noise Control</i> considers noise at specific noise receptors. Typically, these noise receptors represent noise sensitive areas such as dwelling units. However, in order to adequately assess noise impacts on CLFN's traditional land and resource use, the assessment criteria should also include CLFN-specific noise sensitive areas and receptors. This is especially important to include in the ToR for the proposed Project given a) proximity to CLFN Reserve lands and 2) proximity to protected areas of special significance to CLFN.
<b>Request:</b>	Please add to Section 3.1.2[C], criteria that will identify and assess CLFN-specific noise sensitive areas and receptors (developed in direct consultation with CLFN). These noise receptors should represent areas including, but not limited to, key wildlife areas, camps and cabins, travel routes, key hunting and/or gathering locales, traplines, and sacred sites.

<b>2. Project facility noise sources</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Air Quality, Climate and Noise, Impact Assessment; Section 3.1.2[C] b).
<b>Preamble:</b>	The noise sources to be included in the quantitative noise model should include all noise sources related to the Project facilities, including but not limited to: the bitumen processing facilities, water treatment and recycling facilities, steam generation facilities, waste management facilities, truck passbys and the pipeline network.
<b>Request:</b>	Please include in Section 3.1.2[C]b) a list of all the noise sources that should be included in the quantitative noise model, including all sound power data and assumed duty cycles.

<b>3. Transportation noise sources</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Transportation Infrastructure; Section 2.4, and Air Quality, Climate and Noise, Impact Assessment; Section 3.1.2[C].
<b>Preamble:</b>	The ToR should reflect that the noise assessment must also include a quantitative analysis of the impacts resulting from the increased traffic due to the Project.

<b>Request:</b>	<p>a) Please include in Section 3.1.2[C] a requirement for the noise assessment to include noise impacts resulting from increased traffic. The transportation noise assessment should be undertaken using Stamson, TNM 2.5 or other equivalent software.</p> <p>b) Section 2.4 [B] should state that traffic data must be used in the transportation noise model, and should take into account vehicle classification (i.e. automobiles, medium trucks and heavy trucks).</p>
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<b>4. Construction noise</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Air Quality, Climate and Noise, Impact Assessment; Section 3.1.2[C] b).
<b>Preamble:</b>	Short-term construction noise may affect CLFN's traditional land and resource use. Construction noise is often impulsive, uncontrollable, tonal, and may occur unexpectedly. Moreover, the multiple construction activities that emanate noise may or may not be active at any time. Given the aforementioned, construction noise may be more audible at further distances than noise emanating from the Project under operations conditions.
<b>Request:</b>	<p>a) Section 3.1.2[C] should be expanded to include a requirement for the assessment of impacts of construction noise on sensitive receptors and areas, including CLFN-specific receptors (developed in direct consultation with CLFN).</p> <p>b) The assessment should be required to provide data on the nature of the construction noise and the impact exacerbation caused by the constant change in sound levels, and the impulsive and tonal nature of construction noise.</p>

<b>5. Addressing First Nations concerns</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Air Quality, Climate and Noise, Impact Assessment; Section 3.1.2[C], and Mitigation Measures, Section 8
<b>Preamble:</b>	Noise assessments solely relying on AER's <i>Directive 038: Noise Control</i> cannot adequately assess the impacts of noise on First Nations. In order to fully assess the impacts of noise on CLFN, the noise assessment should not be limited to only showing that the combined ambient and predicted Project sound levels do not exceed the permissible sound levels delineated in Directive 038.
<b>Request:</b>	<p>a) Under Section 3.1.2[C] please add criteria such that the noise assessment includes impacts resulting from Project noise under operations conditions on CLFN-specific noise sensitive areas and receptors (developed in direct consultation with CLFN).</p> <p>b) Under Section 8, include a clause that requires Imperial to list all measures planned to mitigate noise impacts during construction and operations on CLFN's traditional land and resource use.</p>

## 5.0 Caprock Integrity and Geomechanics

<b>1. Effects of SA-SAGD-induced surface heaves on the storage capacity and integrity of man-made containment structures</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Project Description, Overview, Section 2.1[B]
<b>Preamble:</b>	The SA-SAGD process will result in surface heaves over the Project area, which will taper off further away from the Project. It is possible that the Central Processing Facility (CPF) will be close enough to the SA-SAGD pilot area that there will be some surface heaves below containment structures (man-made ponds). This could affect the performance of these ponds, e.g. if one end of a pond heaves more than the other, it reduces the capacity of the pond. This could result in spillage if the volume put into the pond exceeds its smaller capacity. In addition, while probable that containment structures will withstand small deformations, Imperial should be required to show how they have considered these in their design.
<b>Request:</b>	In addition to Section 2.1[B] g) of the ToR requiring Imperial to provide maps and/or drawings of the containment structures, such as retention ponds and storage ponds (e.g., lime sludge, stormwater runoff, boiler blow-down), Section 2.1[B] should have additional clauses requiring Imperial to: <ol style="list-style-type: none"> <li>a) Provide technical estimates of the timing, distribution, and ultimate magnitudes of SA-SAGD-induced surface heaves in the vicinity of all containment structures for each stage of SA-SAGD development;</li> <li>b) Clearly show how these containment structures, and all gravity-flow systems connected to these, will have adequate capacity given any expected differential surface heaves; and</li> <li>c) Indicate how the integrity of these structures will be affected by differential surface heaves.</li> </ol>
<b>2. Effects of SA-SAGD-induced surface heaves on natural drainage.</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Environmental Assessment, Hydrology Impact Assessment, Section 3.3.2
<b>Preamble:</b>	The SA-SAGD process will result in surface heaves over the Project area, which will taper off further away from the Project. While these surface heaves are expected to be small (<1m) they have the potential to impact local hydrology. The magnitudes of these surface heaves vary over the area because of differences in the thickness of the oilsands and in the depth to the oilsand reservoir. Surface heaves also vary over time because of the variations in the distribution of steam within the reservoir over time. Because of surface heaves there is the potential for: <ol style="list-style-type: none"> <li>1. flooding of low-lying areas if the mouths of drainage areas become elevated;</li> <li>2. shoreline movements towards the lake if there are heaves along a lake shore, with the extent of movement dependent upon the amount of heave and the slope of the shoreline; and</li> <li>3. partial drainage of low-lying areas due to surface heaves.</li> </ol> Note that the surface heaves above an active SA-SAGD pattern will occur over a

	decade and that it is possible that natural waterways will downcut into the underlying soils to maintain a constant hydrological regime with no flooding.
<b>Request:</b>	In Section 3.3.2 please add an additional requirement for Imperial to: <ol style="list-style-type: none"> <li>a) Provide technical estimates of the timing, distribution, and ultimate magnitudes of SA-SAGD-induced surface heaves over the project area for each stage of SA-SAGD development.</li> <li>b) Describe how differential surface heaves will affect surface drainage, natural wetlands, and shorelines.</li> </ol>

<b>3. Caprock integrity during the SA-SAGD process</b>	
<b>Reference:</b>	No reference – pToR Deficient
<b>Preamble:</b>	A caprock is a rock formation above the oilsand reservoir that will keep fluids such as bitumen, solvent, and steam, in the reservoir. There are two necessary conditions for a good caprock. First, it has to have a low vertical permeability and cover the entire area without any gaps in it. This means that it won't be possible for any reservoir fluids to flow through the caprock. Second, the stress in the caprock must be higher than the injection pressure used in the SA-SAGD process. Otherwise, a higher injection pressure will fracture the caprock and allow reservoir fluids to flow directly to surface (FTS) or into underground aquifers. There are geological variations that can complicate matters, such as dissolution of some of the rock underneath the oilsand reservoir, or erosional channels that have cut into the caprock millions of years ago or by more recent glaciers. As an AER requirement, Imperial will need to provide data showing that the caprock is adequate. However, there are no criteria in the pToR that would require Imperial to provide this data for review so as to ensure the impact assessment is accurate and verifiable.
<b>Request:</b>	<ol style="list-style-type: none"> <li>a) Under Section 3, please add a new section in the ToR requiring Imperial to provide the caprock-integrity assessment of the Project in the EIA. This Section should include criteria for:           <ol style="list-style-type: none"> <li>i. the selection of the caprock,</li> <li>ii. rock-stress profiles,</li> <li>iii. pore-pressure profiles, and</li> <li>iv. supporting data (such as minifrac reports).</li> </ol> </li> <li>b) Under Section 3, please add a new subsection in the ToR requiring Imperial to provide the analysis of geological anomalies that could affect the rock stresses, such as dissolution of salts and carbonates in the underburden, and any channel erosion of the caprock.</li> <li>c) Under Section 3, please add a new subsection in the ToR requiring Imperial to provide the expected and maximum bottom-hole pressures over time for the SA-SAGD process.</li> </ol>

<b>4. Wellbore integrity during drilling, running casing, cementing, and during steam/solvent injection operations</b>	
<b>Reference:</b>	No reference – pToR Deficient

<b>Preamble:</b>	This is similar to the caprock integrity issue described above, except that the possible source of leakage will be along any wellbore going from the surface to the oilsand reservoir and not through the caprock away from the well. Cracks in the caprock along the wellbore may occur if the wellbore pressure exceeds the caprock stress. Any leakage would be from the oilsand reservoir to shallower formations, including aquifers, which may contaminate groundwater and drinking water.
<b>Request:</b>	<ul style="list-style-type: none"> <li>a) Under Section 3, please add a new section in the ToR requiring Imperial to provide the expected wellbore pressure profiles during drilling, casing, cementing, and during SA-SAGD injection, including maximum values.</li> <li>b) Under Section 3, please also state the expected cement density when pumping.</li> </ul>

## 6.0 Hydrogeology

<b>I. Water management - Use of potable groundwater for Project operations</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Water Management, Water Supply, Section 2.6.1[A]
<b>Preamble:</b>	<p>There is currently no request in Section 2.6.1 of the pToR regarding efforts to be made by the proponent to reduce or eliminate the use of potable groundwater for proposed Project operations, as stipulated in the AENV (2006) <i>Water Conservation and Allocation Guideline for Oilfield Injection</i> guidance document.</p> <p><b>References</b>          AENV 2006. Water Conservation and Allocation Guideline for Oilfield Injection.</p>
<b>Request:</b>	Please add a clause under Section 2.6.1[A] of the pToR requiring the proponent to investigate, assess and develop means of reducing or eliminating the use of potable groundwater resources for proposed Project operations in accordance with AENV (2006) guidance.

<b>2. Water management - Target aquifer(s) for Project wastewater disposal</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Wastewater Management, Section 2.6.3 [A]
<b>Preamble:</b>	There is currently no request in Section 2.6.3 of the pToR regarding description of the water quality of the target aquifer or aquifers for Project wastewater disposal, nor regarding environmental suitability of the target aquifer(s) for Project wastewater disposal.
<b>Request:</b>	<p>Please add a clause to Section 2.6.3[A] of the pToR requiring Imperial to:</p> <ul style="list-style-type: none"> <li>a) Provide a description of the groundwater quality of any target aquifers under consideration for Project wastewater disposal</li> <li>b) Provide the rationale for use of targeted aquifers for Project wastewater disposal.</li> </ul>



<b>3. Hydrogeological Impact Assessment - Potential impacts of Project wastewater disposal on host aquifers</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Hydrogeology, Impact Assessment, Section 3.2.2
<b>Preamble:</b>	There is currently nothing in Section 3.2.2 of the pToR requiring the assessment of potential water quality impacts resulting from the proposed Project wastewater disposal to any Project area targeted host aquifer(s). This should be clearly identified as an assessment criteria in the ToR.
<b>Request:</b>	Please add a clause to Section 3.2.2 of the pToR requiring Imperial to provide an assessment of the potential water quality impacts associated with injecting Project wastewater into any targeted host aquifers.

<b>4. Hydrogeological Impact Assessment - Potential SA-SAGD thermal plume-derived contaminant mobilization in groundwater</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Hydrogeology, Impact Assessment, Section 3.2.2
<b>Preamble:</b>	There is currently no request in Section 3.2.2 of the pToR regarding an assessment of the potential for SA-SAGD-derived mobilization of contaminants, such as arsenic at elevated concentrations in groundwater, along with the potential for discharge of these contaminants to local surface water bodies. This should be clearly identified as an assessment criteria in the ToR.
<b>Request:</b>	<ul style="list-style-type: none"> <li>a) Please add a clause to Section 3.2.2 of the ToR requiring Imperial to provide an assessment of the potential for SA-SAGD-derived mobilization of contaminants at elevated concentrations in groundwater.</li> <li>b) Please add a clause to Section 3.2.2 of the ToR requiring Imperial to provide an assessment of the potential for any thermally-mobilized contaminants identified in (a) above to discharge to local bogs, fens, muskeg and surface drainages at elevated concentrations.</li> <li>c) Please add a clause to Section 3.2.2 of the ToR requiring Imperial to provide an assessment of potential environmental impacts associated with thermal mobilization of contaminants to groundwater and surface water.</li> <li>d) Under Section 8 (Mitigation Measures) of the ToR, include a clause that requires Imperial to list all measures planned to mitigate impacts identified in (c) above.</li> </ul>

<b>5. Residual impacts - Assessment approach for Project –related chemical and fuel spills and leaks</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Residual Impacts, Section 9 [A]
<b>Preamble:</b>	There is currently no specific request in Section 9 of the pToR regarding a description of the assessment approach to be taken by Imperial for any Project-related chemical and fuel spills or leaks potentially impacting Project area groundwater resources.

<b>Request:</b>	Given the proximity to CLFN Reserve lands, please add a clause to Section 9 of the ToR requiring Imperial to provide a description of the proposed assessment approach to be used to identify all potential short or long-term residual impacts on the local groundwater regime, traditional resources, and CLFN livelihood and culture resulting from a spill or leak occurring within the CLFN traditional territory.
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<b>6. Monitoring - Baseline groundwater monitoring program in Project Area</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Monitoring, Section 10 [A]
<b>Preamble:</b>	There is currently no requirement in Section 10 of the pToR for a description of the timeframe, scope and extent of the baseline groundwater monitoring program being carried out for the proposed Project. Required information would include the number of baseline groundwater monitoring wells installed, the number of baseline groundwater quality and quantity (level) data sets to be collected prior to Project start-up, and the groundwater quality parameters to be analyzed.
<b>Request:</b>	<ul style="list-style-type: none"> <li>a) Please add a clause to Section 10 of the ToR requiring Imperial to present the scope of the baseline groundwater monitoring program, including: number of monitoring wells in the network, number of baseline groundwater data sets to be collected prior to Project start-up and the suite of groundwater quality parameters to be analyzed.</li> <li>b) Given the proximity to CLFN Reserve lands, please add a clause to Section 10 of the ToR requiring Imperial to present information on how the baseline groundwater monitoring plan will address specific concerns raised by CLFN regarding impacts to water quality on and in the vicinity of Reserve lands.</li> </ul>

<b>7. Monitoring - Proposed Project Groundwater Monitoring Plan</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Monitoring, Section 10 [A]
<b>Preamble:</b>	There is currently no requirement in Section 10 of the pToR for a description, even at the conceptual level, of the Groundwater Monitoring Plan (GMP) for the proposed Project. Given the proximity to CLFN Reserve lands, the EIA should include information about the GMP, including scope, timing of implementation, proposed number and location of monitoring wells, proposed suite of groundwater quality parameters, and proposed well network monitoring intervals and ultimate duration of the GMP plan.
<b>Request:</b>	<ul style="list-style-type: none"> <li>a) Please add a clause to Section 10 of the ToR requiring Imperial to provide the general scope of the proposed GMP for the Project including: approximate number of groundwater monitoring wells to be installed, their expected locations and target depths and aquifers, as well as the proposed suite of water quality monitoring parameters and proposed monitoring frequency to be used both during Project operations and post-closure.</li> <li>b) Please add a clause to Section 10 of the ToR requiring Imperial to specifically address in the EIA, CLFN concerns related to the proximity of Project to Reserve lands ,including requiring a description of how the GMP will rigorously</li> </ul>

	and specifically address potential Project-related water quality impacts to CLFN Reserve lands, as well as potential impacts to local surface water bodies and springs used for traditional purposes.
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## 7.0 Hydrology

<b>1. Define the hydrology assessment area so that complete watersheds are included</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Section 3.3.1[A] Hydrology, Baseline Information.
<b>Preamble:</b>	While impacts to water quantity and flows may be expected to occur initially at discrete locations in the Project Area, given the connectivity of surface water bodies within a watershed, it is important to assess hydrological impacts at the watershed or sub-watershed scale. Assessment areas should not include watershed or sub-watershed fragments, thereby ignoring water bodies that are connected via aboveground or near-surface flows.
<b>Request:</b>	<ul style="list-style-type: none"> <li>a) Please add to Section 3.3.1[A] the need to define and map the hydrology assessment area such that complete watersheds are included.</li> <li>b) Consistently apply this assessment area in related disciplines (i.e., surface water quality and aquatic resources), unless those disciplines require an expanded assessment area.</li> </ul>

<b>2. Identify Aboriginal water users, including users without water withdrawal approvals, permits or licenses</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Section 3.3.1[B] Hydrology, Baseline Information.
<b>Preamble:</b>	Section 3.3.1[B] of the pToR requires that Imperial identify any surface water users in the Project Area who have existing approvals, permits or licenses. No mention is made of people who withdraw raw water for consumption, such as traditional resource users at camp or cabin sites or along trails and traplines. Further, no mention of water quantity requirements for traditional resource users and/or Aboriginal community members is made in the Hydrology Section or in Section 5 of the pToR. Identifying traditional resource users and/or community members who may be impacted by the Project, for example by experiencing lower water levels or flows at sites and/or wells used for water withdrawals, will allow CLFN to more readily understand how the Project may impact their Treaty and Aboriginal Rights.
<b>Request:</b>	<ul style="list-style-type: none"> <li>a) Please add to Section 3.3.1 a requirement for Imperial to identify any CFLN members who withdraw water in the Project Area with or without a permit, approval or license, especially for raw water consumption.</li> <li>b) Please include the locations of water withdrawals and include in the assessment of impact.</li> </ul>

<b>3. Identify watersheds that may be affected by ground subsidence or elevation shifts, should caprock instability become a problem.</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Section 3.3.2[A]b Hydrology, Impact Assessment
<b>Preamble:</b>	Shifts in ground elevation and cap rock instability are of concern in the Cold Lake area. MSES has been advised that CLFN members have expressed concerns that ground subsidence may lead to altered surface water levels and flow.
<b>Request:</b>	<ul style="list-style-type: none"> <li>a) Please add to Section 3.3.2[A] a requirement for Imperial to identify watersheds that may be affected by ground subsidence resulting from SA-SAGD heating and groundwater withdrawal in areas of caprock instability.</li> <li>b) Please add to Section 3.3.2[A] a requirement for Imperial to indicate how water levels, flows and other hydrological aspects of the watersheds may be affected.</li> </ul>

<b>4. Include consideration of ongoing and predicted climate change impacts to water quantity as part of the impact assessment</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Section 3.3.2 Hydrology, Impact Assessment.
<b>Preamble:</b>	Climate change is expected to have impacts on surface water quantity, flow regimes and water temperatures. Predictions for hydrological impacts resulting from the proposed Project should take into account predicted changes in climate for the Project Area.
<b>Request:</b>	Please add to Section 3.3.2 a requirement for Imperial to include an assessment (using the most recent available hydrometric baseline data in predictive modelling exercises) of ongoing trends and predicted climate change impacts to water quantity, flows and water temperature when assessing Project-related and cumulative hydrological impacts.

<b>5. Conduct an assessment of cumulative effects on hydrology</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015), Section 3.3.2 Hydrology, Impact Assessment.
<b>Preamble:</b>	Given the proximity of the Project to numerous other oil and gas projects, the Cold Lake Air Weapons Range, and other developments, a Cumulative Effects Assessment (CEA) should be completed by Imperial to determine whether there have already been impacts on water levels, flow regimes and channel regimes in the region and how the proposed Project may add to these impacts. MSES has been informed that CLFN members have expressed concern over hydrological impacts that have already occurred in the region, such as changes to water levels, which can negatively impact their ability to carry out traditional resource and land use activities.
<b>Request:</b>	Please add to Section 3.3.2 a requirement for Imperial to conduct a cumulative effects assessment on surface water levels, flow, and channel regimes in the Project region.

## 8.0 Surface Water Quality

<b>1. Specify required water quality parameters</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015), Section 3.4.1[A] Surface Water Quality, Baseline Information
<b>Preamble:</b>	<p>In the pToR, Imperial is requested to consider baseline water quality of watercourses and waterbodies using “<i>appropriate water quality parameters</i>”. Given that there are known compounds of concern that may impact surface water quality as a result of the proposed Project, the pToR should specify, at minimum, the key water quality parameters that must be assessed by Imperial. For example, thermal mobilisation of arsenic compounds to groundwater and subsequently surface water is a possible result of subsurface heating via a SA-SAGD operation. Similarly, contamination of groundwater and subsequently surface water by compounds used in the SA-SAGD process, in this case diluent or solvent along with saline water, is a possible impact of the Project. Therefore, the baseline water quality assessment should absolutely include metals and hydrocarbon sampling (including PAHs/PACs).</p> <p>Additionally, pH, alkalinity, hardness and fluoride data would be necessary to determine each waterbody’s susceptibility to acidification resulting from aerial deposition of acidifying compounds. In waterbodies, temperature, dissolved oxygen, pH and conductivity should be measured across a vertical water column profile, in order to account for changes in stratification that may result from impacts to water temperature, especially where heated groundwater may interact with surface waters.</p>
<b>Request:</b>	<p>Please include in Section 3.4.1[A], at a minimum, a request to sample seasonally (including in winter and before and after the freshet) for the following surface water quality parameters:</p> <ol style="list-style-type: none"> <li>Temperature, pH, conductivity, cations and anions, dissolved oxygen. In lakes and smaller waterbodies, these parameters should be measured in a vertical profile using consistent and repeatable methods;</li> <li>Nutrients - both dissolved and total nitrogen species, phosphorus species, organic and inorganic carbon measures, alkalinity, hardness, total and dissolved solids;</li> <li>Metals - both dissolved and total mercury, arsenic, lead, boron, aluminum, iron, vanadium, manganese, strontium, beryllium, cadmium, chromium, copper, nickel, selenium, silver, thallium, zinc, lithium, uranium, molybdenum;</li> <li>Hydrocarbons, PAHs/PACs and other oil sands water contaminants such as naphthenic acids (total, labile and refractory estimates);</li> <li>Any elements and compounds used in the SA-SAGD process, including diluent/solvent and additives.</li> </ol>
<b>2. Specify locations of assessment sampling</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015), Section 3.4.1[A] Surface Water Quality, Baseline Information.

<b>Preamble:</b>	<p>The pToR does not provide any guidance on what types of sites and/or locations should be sampled as part of the surface water quality assessment. Environmental assessments in Alberta often involve sampling surface water quality at locations throughout a watershed, with the goal of creating a general characterisation of water quality in a Project Area. However, this approach does not allow for changes in water quality at any given site to be readily detected. Instead, proponents can only report whether conditions in a given watercourse or waterbody fall within a very broad, and relatively unhelpful, range of regional conditions. Sampling and reporting data for carefully selected locations will allow for a proper before-after/control-impact assessment of any Project-related and cumulative impacts.</p>
<b>Request:</b>	<p>a) Please include in Section 3.4.1[A], at a minimum, a requirement that baseline and ongoing monitoring data be collected from all waterbodies in the assessment area. This data collection should focus on areas where impacts are possible, including those identified in the air quality, hydrogeology and hydrology impact assessments. These may include:</p> <ol style="list-style-type: none"> <li>I. Project infrastructure water body crossing locations,</li> <li>II. Areas of groundwater-surface water interaction, including springs,</li> <li>III. Areas that may experience changes in flow, discharge and/or water levels,</li> <li>IV. Areas that may experience changes in water temperature, including where water body stratification regimes may be altered,</li> <li>V. Locations where traditional land use occurs, including where raw water withdrawals occur for consumption.</li> </ol> <p>b) Please include in Section 3.4.1[A], at a minimum, a requirement that along watercourses, water quality be sampled up- and downstream of the anticipated impact location, while waterbodies such as lakes should be sampled with adequate replication (minimum of three sampling locations, sampling of epi- and hypolimnion, where applicable).</p> <p>c) Please include in Section 3.4.1[A], at a minimum, a requirement that where watercourses change in character over their length (e.g., traveling through lakes/ponds/wetlands, at major confluences, shifts in terrestrial biomes/flow regimes/discharge volumes), water quality be sampled along the longitudinal gradient so that each major change is accounted for.</p> <p>d) Please include in Section 3.4.1[A], at minimum, a requirement that baseline data be presented separately for each sampling site, and if possible, presented as trends over time.</p>

<b>3. Sample baseline snowpack from the Project Area</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015), Section 3.4.1[A] Surface Water Quality, Baseline Information

<b>Preamble:</b>	<p>Snowpack in regions impacted by emissions from oilsands operations may be contaminated with metals and PACs (Kelly et al. 2009, 2010), as well as with acidifying compounds (such as nitrogen and sulfur compounds). In order to properly assess cumulative impacts, and considering the existing oil and gas operations in the vicinity of the proposed Project, existing and ongoing contamination of snowpack must be assessed. Predicted Project-related impacts to snow quality can then be added to existing impacts in order to predict cumulative impacts to surface water quality.</p> <p><b>References</b></p> <p>Kelly, E.N., Short, J.W., Schindler, D.W., Hodson, P.V., Ma, M., Kwan, A.K. and Fortin, B.L. 2009. Oil sands development contributes polycyclic aromatic compounds to the Athabasca River and its tributaries. Proceedings of the National Academy of Sciences 106 (52): 22346-22351.</p> <p>Kelly, E.N., Schindler, D.W., Hodson, P.V., Short, J.W., Radmanovich, R. 2010. Oil sands development contributes elements toxic at low concentrations to the Athabasca River and its tributaries. Proceedings of the National Academy of Sciences 107 (37): 16178-16183.</p>
<b>Request:</b>	<ul style="list-style-type: none"> <li>a) Please include in Section 3.4.1[A] a requirement to sample snowpack in the Project Area before snowmelt and at the onset of the freshet in order to characterise potential contaminant inputs resulting from aerial deposition of metals, PACs, and acidifying compounds to the snow pack.</li> <li>b) Snow samples should be analyzed for the same parameters as outlined above for surface water samples (see Section 7.0 #1).</li> </ul>

<b>4. Conduct a sediment quality assessment</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015), Section 3.4.1[A] Surface Water Quality, Baseline Information
<b>Preamble:</b>	While water quality is an important key determinant of ecological and human health impacts, sediment quality has a distinct and similarly important influence on benthic organisms and the animals that feed on them (including fish), as well as on long-term water quality patterns. If contaminants such as metals are associated primarily with particulates, sediments in streams and lakes may show greater contamination than the water overlying them.
<b>Request:</b>	Please include in Section 3.4.1[A] a requirement to collect baseline data for sediment quality in the Project Area, from both waterbodies and watercourses, especially in depositional areas, with adequate replication.

<b>5. Conduct an assessment of acidification potential</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015), Section 3.4.2 Surface Water Quality, Impact Assessment

<b>Preamble:</b>	Both aerial deposition of acidifying compounds and temporary pH depression in watercourses during snowmelt may negatively affect water quality and aquatic ecosystem health within the Project Area. Imperial should use predicted air quality and emissions data, and water quality and snow quality data to determine the susceptibility of water bodies and watercourses to acidification.
<b>Request:</b>	Please include in Section 3.4.2 a requirement to conduct an assessment of Project-related acidification potential for each specific waterbody and watercourse in the Project Area.

<b>6. Identify the specific locations in the Project Area that are expected to experience Project-related surface water quality impacts</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015), Section 3.4.2 Surface Water Quality, Impact Assessment.
<b>Preamble:</b>	When considering how the Project may impact specific land uses, CLFN will need to know the actual locations of predicted impacts. Changes to surface water quality on a regional scale will be of limited use in these deliberations. For this reason, the impact assessment should refrain from comparing predicted surface water quality in the Project Area to regional ranges.
<b>Request:</b>	Please include in Section 3.4.2 a requirement for Imperial to identify each specific sampling site that is predicted to experience surface water quality impacts/changes and identify the specific season and time for when this is expected to occur.

<b>7. Provide chemical profiles of all potential sources of contaminants to surface waters (including via groundwater) generated by or for the Project.</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015), Section 3.4.2 Surface Water Quality, Impact Assessment
<b>Preamble:</b>	Some of the challenges of identifying SA-SAGD Project-related impacts to surface water quality are the complexity of ground-surface water interactions, the variability of water quality on the landscape, and the many different potential sources of contamination from a SA-SAGD project (i.e., drilling fluids, diluents/solvents and groundwater used in the extraction process, all wastewaters, storm water, treated effluent, etc.). In order to be able to identify contamination originating with the proposed Project, chemical profiles and key indicator parameters should be provided to facilitate baseline establishment and enhance ongoing monitoring.
<b>Request:</b>	<ul style="list-style-type: none"> <li>a) Please include in Section 3.4.2 a requirement for Imperial to indicate how baseline and ongoing sampling efforts will be used to detect contamination of surface waters by any of these sources.</li> <li>b) Please include in Section 3.4.2 a requirement for Imperial to provide a list of key indicator parameters for each potential contaminant source.</li> </ul>

<b>8. Conduct an assessment of cumulative effects on surface water quality</b>	
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<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015) Section 3.4.2 Surface Water Quality, Impact Assessment
<b>Preamble:</b>	Given the proximity of the Project to numerous other oil and gas projects, the Cold Lake Air Weapons Range, and other developments, a Cumulative Effects Assessment (CEA) should be completed by Imperial to determine whether there have already been impacts on surface water quality (including via groundwater quality impacts) in the region and how the Project may add to these impacts. MSES has been advised that CLFN members have expressed concern over surface water quality impacts that may have already occurred in the region, and which negatively impact their ability to carry out traditional land and resource use activities.
<b>Request:</b>	Please include in Section 3.4.2 a requirement for Imperial to conduct an assessment of cumulative effects on surface water quality in the Project Area (including via groundwater quality impacts, sediment contamination, and acidification).

## 9.0 Aquatic Ecology

<i>1. Use of aquatic resources by CLFN should be included in the assessment of impact</i>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015), Section 3.5.1 [C] Aquatic Ecology, Baseline Information
<b>Preamble:</b>	In order to properly assess impacts to aquatic organisms, the hydrological and water quality changes specific to each water body must be considered because impacts to a given species may be greater at one location in the Project Area than in another location. For example, decreases in flow or temperature regimes will have different effects on a given fish species between large and small systems, or lakes and rivers. In addition, CLFN members will be better able to understand the potential for impacts to aquatic resource use.
<b>Request:</b>	Please add an additional requirement to Section 3.5.1 [C] that goes beyond simply describing current and potential future use of fish resources and request that aquatic resources used by Aboriginal groups, including CLFN, be identified in direct consultation with the CLFN, so that impacts to traditional aquatic resource use can be assessed specifically for each waterbody and watercourse in the Project Area.

<i>2. Sample and assess aquatic resource quality, not just quantity</i>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015) Section 3.5 Aquatic Ecology, Baseline Information, 3.5.1 [A] and Impact Assessment, 3.5.2 [A].
<b>Preamble:</b>	The pToR makes no mention of collecting baseline data or assessing Project impacts on fish and bivalve tissue quality or tainting potential. Along with the quantity of aquatic resources available for use by CLFN, MSES has been advised that there is a concern over the quality of those resources. Tainted fish flesh, or fish and invertebrates that are contaminated above safe consumption limits may lead to diminished use by CLFN. Additionally, indicators of fish or invertebrate health provide information about the

	health and potential resilience of aquatic resources, beyond simple abundance measures outlined in the pToR.
<b>Request:</b>	Please add additional requirements to Section 3.5.1[A] and 3.5.2 [A] that require Imperial to include, in the baseline and impacts assessments, measures of predicted fish and invertebrate tainting, length-weight data for fish, occurrence of lesions and deformities, and bioaccumulation potential for aquatic species used by Aboriginal groups, including CLFN.

<b>3. As part of the impact assessment, link predicted and possible physical and chemical (water quantity and quality) data from water bodies to potential impacts on aquatic organisms</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015) Section 3.5.2[A] Aquatic Ecology, Impact Assessment.
<b>Preamble:</b>	Surface water flows and levels, temperature regimes, salinity, pH, nutrient availability and primary productivity, and contaminant concentrations all influence the health, abundance, distribution and habitat use by fish and aquatic invertebrates at various life stages. Given that specific impacts to water quantity and quality will have been assessed in the hydrology and surface water quality portions of the Project impact assessment (if the above recommendations are adopted), there should be sufficient physical and chemical information to subsequently predict impacts to fish and fish habitat, and aquatic invertebrates.
<b>Request:</b>	Please add additional requirement to Section 3.5.2 [A] that requires Imperial to link predicted and possible physical and chemical (water quantity and quality) impacts from water bodies to potential impacts on fish and fish habitat, and aquatic invertebrates.

<b>4. Key aquatic indicators used to assess Project impacts should be identified through a process that includes CLFN input</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015) Section 3.5.2[B] Aquatic Ecology, Impact Assessment.
<b>Preamble:</b>	The choice of key aquatic indicators for the impact assessment is an important step in the EA process. Along with considering the availability of data and the aquatic species that represent certain niches commonly used in impacts assessments, Imperial should also include aquatic organisms and other indicators that have been identified as important in direct consultation with CLFN. For example, bivalves are not commonly used as key indicators in EIAs in Alberta, however freshwater clams have been identified by CLFN as an important aquatic resource. In order for the EIA to consider CLFN's traditional resource use and harvesting rights, Imperial should prioritize impacts to organisms and other indicators considered culturally important to CLFN, along with the other standard or commonly used indicators.
<b>Request:</b>	Please add an additional requirement to Section 3.5.2 [B] that requires Imperial to consult directly with Aboriginal groups, including CLFN, during the process of choosing key aquatic indicators for use in the impact assessment and to prioritize impacts to

	organisms and other indicators considered culturally important to Aboriginal groups, including CLFN.
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<b>5. Define targets and/or thresholds that will be applied to key indicators in determining impacts</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015) Section 3.5.2[B] Aquatic Ecology, Impact Assessment.
<b>Preamble:</b>	Defined targets and/or thresholds are necessary for consistent identification and assessment of impacts to aquatic resources as part of an impact assessment. Setting targets for fish and invertebrate population size and dynamics, habitat quantity and quality, and aquatic resource quality are necessary both to determine impacts and to define triggers for mitigation efforts. CLFN should be involved in determining targets and thresholds.
<b>Request:</b>	<ul style="list-style-type: none"> <li>a) Please add additional requirement to Section 3.5.2 [B] that requires Imperial to define targets and/or thresholds in a scientifically defensible way for each key aquatic indicator.</li> <li>b) Imperial should indicate how these targets and thresholds will be used when determining if and how impacts will occur.</li> <li>c) Imperial should indicate how these targets/thresholds have integrated Aboriginal groups, including CLFN, comments and concerns.</li> </ul>

<b>6. Conduct an assessment of cumulative effects on aquatic resources</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015) Section 3.5.2, Aquatic Ecology, Impact Assessment.
<b>Preamble:</b>	Given the proximity of the Project to numerous other oil and gas projects, the Cold Lake Air Weapons Range, and other developments, a CEA should be completed by Imperial to determine whether there have already been impacts on fish and fish habitat, and aquatic invertebrates in the region and how the Project may add to these impacts. MSES has been notified that CLFN members have expressed concern over a decrease in fish abundance in the region, which can negatively impact their ability to carry out traditional resource use.
<b>Request:</b>	Please include in Section 3.5.2 a requirement for Imperial to conduct an assessment of cumulative effects on fish and fish habitat, and aquatic invertebrates.

## 10.0 Vegetation, Wetlands, Reclamation

<b>1. Current requirements in the pToR for the Conservation and Reclamation Plan will not result in reclaimed plant communities that are similar to pre-disturbance communities, as requested by CLFN</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Section 2.8 Conservation and Reclamation, Criteria [A] (a),(d) & [B]
<b>Preamble:</b>	A Conservation and Reclamation Plan (C&R plan) should provide a road map for restoring areas disturbed by a proposed Project. Reclaimed sites should be as similar

<p>as possible to the pre-disturbance forest in terms of the variety of plant communities and the species richness, abundance, and composition of each plant community. The criteria in the current pToR will not accomplish this goal and needs to be revised in order to achieve a methodologically and technically sound EIA and C&amp;R Plan.</p> <p>Section 2.8[A] states: “Provide a conceptual conservation and reclamation plan for the Project. Describe and map as applicable: (a) current land use and proposed post-development land use and capability.” However, post-development land use and capability are vague goals that do not reference the diversity of plant species and communities found in the pre-disturbance forest. Ecosite phases and wetland types are mappable components of specific classification systems and each has distinct canopy and understorey plant species. The pToR should require that Imperial describe and map both the pre-disturbance and proposed post-development “<b>Ecosite phases and wetland types</b>”.</p> <p>To restore disturbed areas such that they are as similar as possible to the pre-disturbance forest, the re-vegetation plan must include the <u>active re-establishment</u> (i.e., planting, seeding, root stocks, etc.) of as many pre-disturbance plant species as possible, including all of the plant species identified by CLFN as important for traditional use. In Section 2.8[A]d) the pToR states that “a revegetation plan consistent with CEMA’s Guidelines for Reclamation to Forest Vegetation in the Athabasca Oil Sands Region” should be provided within the C&amp;R plan. However, these Guidelines (AENV 2010) only recommend that proponents reclaim to much broader categories of plant communities than are present prior to disturbance (i.e., reclaim to Site Type rather than Ecosite Phase) and the target number of species recommended for re-establishment in each Site type is 1-2 orders of magnitude lower than that found in corresponding Ecosites Phases (i.e., recommended target for “d” Site Types is 7 species versus 200 species found in pre-disturbance “d” Ecosites). Therefore, the pToR should require that the re-vegetation plan uses the Guidelines as a starting point for determining some of the plant species to be actively re-established within ecosites. Imperial should be required to go beyond the Guidelines in terms of the plant communities to be re-established (Ecosites or ecosite phases instead of Site Types), and the number, abundance, and composition of species within those communities.</p> <p>In Section 2.8[B] the pToR also states: “Discuss, from an ecological perspective, the expected timelines for establishment and recovery of vegetative communities and wildlife habitat, the expected success of establishment and recovery, and the expected differences in the resulting communities”. It is critical that Imperial be required to provide <u>scientific evidence</u> to support the “expected timelines for establishment and recovery of vegetative communities,” as well as “the expected success of establishment and recovery.” Evidence must be in the form of peer-reviewed scientific literature or data. Further, Imperial has been operating in the Cold Lake area for over 20 years and should be able to provide concrete examples and evidence regarding timelines and success of reclamation activities for other similar projects.</p>
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	<p><b>References</b>          AENV (Alberta Environment). 2010. Guidelines for Reclamation to Forest Vegetation in the Athabasca Oil Sands Region. Prepared by the Terrestrial Subgroup of the Reclamation Working Group of the Cumulative Environmental Management Association, Fort McMurray, AB. December 2009. ISBN: 978-0-7785-8826-9</p>
<b>Request:</b>	<p>Section 2.8[A] of the ToR should be amended to require that Imperial's Conservation and Reclamation Plan include:</p> <ul style="list-style-type: none"> <li>a) A description and map of pre-disturbance and proposed post-development ecosite phases and wetland types;</li> <li>b) A re-vegetation plan that goes beyond CEMA's Guidelines for Reclamation (AENV 2010) in terms of the plant communities to be re-established (Ecosites or ecosite phases instead of Site Types), and the number, abundance, and composition of species within those communities;</li> <li>c) Evidence, either from peer-reviewed scientific literature and/or data from other similar regional Imperial projects, to support the "expected timelines for establishment and recovery of vegetative communities" and "the expected success of establishment and recovery."</li> </ul>

2. Sampling methods and the distribution of sample sites among vegetation types need to be provided to allow CLFN to assess the accuracy of baseline data	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Section 3.6.1 Vegetation Baseline Information, Criteria [A],
<b>Preamble:</b>	Section 3.6.1 of the pToR should reflect the need for Imperial to be required to clearly present the methods that will be used to sample vegetation and to show the number and distribution of sample sites within the vegetation types in the Project sampling area. Providing this information will allow CLFN to assess whether Imperial's sampling methods and sampling intensities are adequate to produce accurate baseline data.
<b>Request:</b>	<p>Section 3.6.1[A] of the ToR should be amended to require that Imperial:</p> <ul style="list-style-type: none"> <li>a) Describe the methods used to sample vegetation data across the study area;</li> <li>b) Provide, in table-form, the number of samples taken from within each vegetation type; and</li> <li>c) Provide a map showing the distribution of sample sites within vegetation types in the study area.</li> </ul>

3. The pToR monitoring criteria will not ensure an accurate assessment of the effectiveness of reclamation

<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015). Section 10, Monitoring, Criteria [A]
<b>Preamble:</b>	<p>Section 10 of the pToR states: “Describe Imperial’s current and proposed monitoring programs, including: a) how the monitoring programs will assess any project impacts and measure the effectiveness of mitigation plans.” Although the intent of this statement is good, measuring the effectiveness of mitigation plans, particularly for reclamation, requires that quantitative measures be used. For successful reclamation monitoring, this involves the use of similarity indices to compare pre-disturbance and post-development ecosite phase and wetland type species richness, species abundance, species composition, and the area within each ecosite phase/vegetation type.</p> <p>Further, a commitment and plan to develop, in consultation with CLFN, specific targets or thresholds of each measure of similarity that define reclamation success should be required in Section 10 of the ToR. Imperial should be required to work cooperatively with Aboriginal land users including CLFN, to develop such thresholds or targets of each measure of similarity (i.e., species richness, abundance, etc.). Having concrete and measurable reclamation targets that are mutually agreeable to all parties will ensure the best possible outcome in terms of the diversity within plant communities that are re-established in reclamation.</p>
<b>Request:</b>	<p>Section 10[A] of the ToR should be amended to require that Imperial:</p> <ul style="list-style-type: none"> <li>a) Provide quantitative measures of similarity to be used to measure the effectiveness of reclamation for species richness, species abundance, species composition, and area in each ecosite phase/wetland type.</li> <li>b) Present a commitment and plan to work cooperatively with Aboriginal land users, including CLFN, to develop mutually agreeable thresholds or targets of similarity that would define reclamation success.</li> </ul>

## 11.0 Wildlife and Biodiversity

<i>I. Ongoing engagement and monitoring programs</i>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015), Section 1[C], Public Engagement and Aboriginal Consultation
<b>Preamble:</b>	CLFN knowledge of traditional resources and understanding of ecosystem change should be included in the monitoring and assessment of environmental impact. The current wording in the pTOR is: “Describe plans to maintain the public engagement and Aboriginal consultation process following completion of the EIA report.” However, it is not clear whether ‘Aboriginal consultation’ involves any meaningful opportunity for CLFN to comment on monitoring programs or participate in monitoring activities. The current standardized guidelines provided by the Alberta government regarding ToRs (AESRD

	<p>2013) do not provide sufficient detail on the extent to which Aboriginal views must be incorporated into project planning and environmental management. AESRD (2013) simply states “Describe plans to maintain the public engagement and Aboriginal consultation process following completion of the EIA report to ensure that the public and Aboriginal peoples will have an appropriate forum for expressing their views on the ongoing development, operation and reclamation of the Project.” (pg. 3.).</p> <p><b>References</b>          AESRD, 2013. Alberta Environment and Sustainable Resource Development, 2013. Standardized Terms of Reference - Updated January 2013. Environmental Assessment Team, Alberta Environment and Sustainable Resource Development, Edmonton, Alberta. EA Guide 2009-1. 1 p.</p>
<b>Request:</b>	<p>Please revise Section I[C] of the ToR to explicitly describe plans that include consultation and participation of Aboriginal groups, including CLFN, in environmental planning, management, and monitoring through all phases of the Project lifespan.</p>

<p>2. Discussion of key issues needs to include quantification of timelines, the success of recovery, and differences in the resulting vegetation communities and wildlife habitat</p>	
<b>Reference:</b>	<p>Imperial Cold Lake Midzaghe Project, pToR (July 24, 2015), Section 2.8[B], Conservation and Reclamation.</p>
<b>Preamble:</b>	<p>Current wording in the Imperial pToR and current guidelines for ToR from the government do not convey the expectation that adaptive management, conservation, and reclamation will use a scientific approach. Current guidelines for ToR (AESRD 2013) state:</p> <p style="padding-left: 40px;"><i>“[B]Discuss, from an ecological perspective, the expected timelines for establishment and recovery of vegetative communities and wildlife habitat, the expected success of establishment and recovery, and the expected differences in the resulting communities.” (pg.8)</i></p> <p>Similarly, the Imperial pToR states:</p> <p style="padding-left: 40px;"><i>“[B]Discuss, from an ecological perspective, the expected timelines for establishment and recovery of vegetative communities and wildlife habitat, the expected success of establishment and recovery, and the expected differences in the resulting communities.” (pg.8)</i></p> <p>However, neither of these statements indicate that Imperial <u>will quantify</u> the establishment of vegetation, the quality of habitat, the degree of successful recovery, and the measured difference between actual and expected ecological communities. An explicit commitment to the use of science and quantifiable measures of environmental impact and recovery are needed for CLFN to understand the actual magnitude of change to the landscape and traditional lands and resources.</p> <p><b>References</b></p>

	AESRD, 2013. Alberta Environment and Sustainable Resource Development, 2013. Standardized Terms of Reference - Updated January 2013. Environmental Assessment Team, Alberta Environment and Sustainable Resource Development, Edmonton, Alberta. EA Guide 2009-1. 1 p.
<b>Request:</b>	Please change the wording in Section 2.8 [B] from what is stated above to a statement that reflects a commitment to science and evidenced-based environmental assessment: “From an ecological perspective, outline how the expected timelines for establishment and recovery of vegetative communities and wildlife habitat will be quantified, how the expected success of establishment and recovery will be measured, and how the expected differences in the resulting communities will be quantified.”

<b>3. Baseline information on species abundances requires measurement</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 3.7.1[A], Wildlife: Baseline Information.
<b>Preamble:</b>	<p>The pToR does not include wording consistent with a scientific approach to assessing baseline information on the relative abundance of species and habitat. Relative abundance can be defined in a number of ways, not all of them reflect a scientific approach. An appropriate definition that could be adopted by Imperial might be: “a measurable correlation of density.” (Boitani and Fuller 2000). Moreover, quantifying species habitat use is a key requirement of validating habitat models (Muir et al. 2012). Language reflecting commitment by Imperial to adopt a scientific approach is critical to CLFN capacity to understand the impact of this project on traditional resources and other wildlife.</p> <p><b>References</b></p> <p>Boitani, L., and T. K. Fuller. 2000. Research Techniques in Animal Ecology: Controversies and Consequences. Columbia University Press.</p> <p>Muir, J.E, M. d’Entremont, J. Gatten, L. Ainsworth and D. Robichaud. 2012. Validation Procedures for Habitat Models in the Oil Sands Region. LGL Report EA3354. Unpublished report by LGL Limited environmental research associates, Sidney, BC, for the Cumulative Environmental Management Association (CEMA) – The Reclamation Working Group (RWG), Fort McMurray, AB. 95 pp + Appendices.</p>
<b>Request:</b>	Please change the current pToR wording in Section 3.7.1[A] from “Describe species relative abundance, distribution and their use and potential use of habitats.” to “Quantify species relative abundance, distribution, and their use and potential use of habitats.”

<b>4. Commitment to validate the description of habitat models is missing</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 3.7.1[B], Wildlife: Baseline Information.



<b>Preamble:</b>	<p>Habitat models used to create habitat maps as described in the Imperial pToR Section 3.71[B] require validation to ensure that model predictions are accurate. Many EIAs have failed to validate their habitat models, undermining efforts to understand the impact of landscape change (Muir et al 2011).</p> <p><b>References</b>                  Muir, J.E, V.C. Hawkes, K.N. Tuttle, and T. Mochizuki. 2011. Synthesis of Habitat Models used in the Oil Sands Region. LGL Report EA3259. Unpublished report by LGL Limited environmental research associates, Sidney, BC, for the Cumulative Environmental Management Association (CEMA) – The Reclamation Working Group (RWG), Fort McMurray, AB. 30 pp + Appendices.</p>
<b>Request:</b>	<p>In addition to the current pToR Section 3.71[A] and [B], Imperial should be required to include the following in Section 3.7.1: “[C] Describe and demonstrate the validation of habitat models used to map wildlife resources.”</p>

<p>5. Information on assessment of impacts to wildlife and wildlife habitats requires commitment to a scientific approach</p>	
<b>Reference:</b>	<p>Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 3.7.2[A], Wildlife: Impact Assessment.</p>
<b>Preamble:</b>	<p>It is unclear from the current Imperial pToR if an assessment of potential impacts to wildlife and wildlife habitats resulting from the Project will be quantitatively measured. CLFN need to know <u>how much</u> of their traditional resources, other wildlife, and wildlife habitat will be affected by the proposed Project and over what timeframe. To this end, the pToR needs to be explicit in the approaches used to assess impacts on wildlife.</p>
<b>Request:</b>	<p>Please change the beginning sentence in the current pToR, Section 3.7.2[A] to the following:                  “Measure and then quantify the potential impacts of the Project to wildlife and wildlife habitats, considering...”</p>

<p>6. Rationale for the selection of indicator species must include a description and justification of which ecological processes and other species are represented by the chosen indicator</p>	
<b>Reference:</b>	<p>Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 3.7.2[B], Wildlife, Impact Assessment.</p>
<b>Preamble:</b>	<p>Indicator species are a subset of wildlife used to assess the impacts resulting from a proposed project and are sometimes chosen as surrogate measures for how the Project will affect other ecological processes or species. The relationship between the chosen indicator species and what it is representing needs to be made clear in the EIA. Key wildlife and habitat indicators used to assess Project impacts should be identified through a consultation process that includes CLFN input.</p>

<b>Request:</b>	<p>a) Please change Section 3.7.2[B] to be stated as: “Identify the key wildlife and habitat indicators used to assess project impacts. Discuss the rationale for their selection and describe any association or surrogacy between the indicator and other species or ecological processes.”</p> <p>b) For the selection of key wildlife and habitat indicators, please include wildlife species identified as important to Aboriginal groups, including but not limited to, endangered species, and traditionally used resources.</p>
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## 12.0 Health

<b>1.</b> The Baseline Case for assessment should be based on pre-industrial development (i.e., before the first oil exploration activities) in the region	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 6.1
<b>Preamble:</b>	Section 6.1 of the pToR requires Imperial to “[A]... <i>Determine quantitatively whether there may be implications for public health arising from the Project.</i> ” In most EIAs, these assessments use Baseline Cases that include emissions/releases from other industrial activities in the area, and are thus not true Baseline Cases. This approach results in an underestimate of the risks associated with a Project on Aboriginal receptors. This has a direct bearing on Section 6.1 “[C] <i>Document any health concerns identified by Aboriginal communities or groups resulting from impacts of existing development and of the Project, specifically on their traditional lifestyle. Include an Aboriginal receptor type in the assessment.</i> ” This is a key point because the Baseline Case is used as the reference point to compare the Application Case and the Planned Development Case. Use of appropriate reference conditions is needed so that the environmental and human health impacts associated with the Project can be accurately assessed in the correct context.
<b>Request:</b>	For the stated quantitative determination of public health impacts in Section 6.1 of the pToR, the Baseline Case should be based on pre-industrial development (i.e., before the first oil exploration activities took place) in the region. The ToR should specify that Project impacts on Aboriginal receptors be compared to the pre-development Baseline Case.

<b>2.</b> Mobilization of metals in shallow groundwater due to thermal heating associated with the SA-SAGD process is a significant concern and should be evaluated in the EIA	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 6.1
<b>Preamble:</b>	The risks to human health and/or wildlife may be underestimated if mobilization of metals in groundwater associated with the SA-SAGD process are not included in the assessment. This is especially critical for the proposed Project given the close proximity to several CLFN Reserves and traditionally used lands and resources.
<b>Request:</b>	Please include in Section 6.1 a requirement for Imperial to conduct an assessment of the impacts/risks associated with mobilization of metals in groundwater and subsequent impacts to drinking water and surface waters associated with subsurface thermal heating from the SA-SAGD process.

<b>3. Airborne deposition and subsequent run-off and accumulation of contaminants in rivers, streams, lakes should be evaluated in the EIA</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 6.1
<b>Preamble:</b>	The risks to human health and/or wildlife may be underestimated if airborne deposition and subsequent run-off and accumulation of contaminants in rivers, streams, lakes (and ultimately aquatic resources) associated with the SA-SAGD process are not included in the assessment. For example, mercury is of particular concern to human health and aquatic resources via this pathway because it is persistent and bioaccumulative. This is especially critical for the proposed Project given the close proximity to several CLFN Reserves and traditionally used lands and resources.
<b>Request:</b>	Please include in Section 6.1, a requirement for Imperial to assess: <ol style="list-style-type: none"> <li>a) The impacts to the aquatic environment associated with deposition of particulates (i.e., with particle phase chemicals [e.g., inorganics], particle bound chemicals [e.g., semi-volatile organics]), and subsequent transport of particulates via erosion to streams and lakes within the region.</li> <li>b) The potential impacts to human health and traditionally used aquatic resources associated with bioaccumulation/biomagnifications of thermally mobilized metal particulates.</li> </ol>

### 13.0 Historic Resources

<b>1. Lack of requirement for a historical resource management plan for the life of the Project</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 4.1 Historic Resources Baseline Information, 4.2 Historic Resources Impact Assessment
<b>Preamble:</b>	The pToR does not clearly state a requirement for Imperial to demonstrate how historic resources concerns will be managed over the life of the Project. Once baseline information is collected, it is unclear how Imperial will proceed with historical resources assessments. Section 4.2 [B] outlines what would be covered by Imperial's Impact Assessment, but it is unclear at what stage in the regulatory process this impact assessment or future assessments are to be carried out. It is also unclear how baseline information will be used to guide the impact assessment process. Often baseline information collected for a project simply includes generalized maps and cursory survey data that is not organized under a coherent research design. As such, baseline studies often contribute very little to the ensuing historical resources management program.
<b>Request:</b>	Please include in Section 4 a requirement for Imperial, in direct consultation with CLFN and other potentially-affected Aboriginal groups, to collaboratively develop a Historic Resources Management Plan that includes: <ol style="list-style-type: none"> <li>a) A description of how baseline information will be used to guide the impact assessment process.</li> <li>b) A research design that will focus the impact assessment process on relevant research questions and guide the field, laboratory and analysis methods used over the life of the Project.</li> </ol>

	<p>c) A schedule of when historical resources impact assessments will be carried out during the life of the Project (specific calendar dates are not required). This should include information on when impact assessments will take place (i.e., during the disposition application process for each Project phase, during footprint-specific applications to the AER, or on a timeline established by Alberta Culture and Tourism).</p>
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<b>2. Inclusion of First Nations Traditional Knowledge in baseline studies</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 4.1[B] and [D] Historic Resources Baseline Information
<b>Preamble:</b>	<p>One of the most valuable resources for informing baseline conditions of a Historic Resources Impact Assessment (HRIA) is traditional knowledge from local First Nations communities. This information can be of great value in locating archaeological sites. Traditional knowledge can also greatly enhance the interpretation of sites ranging from detailed information about historic sites (e.g., the names of a trapper that lived in a cabin or the story behind a graveyard) to information about pre-contact sites such as artifact function and distribution, seasonality, etc.</p> <p>Current models for defining archaeological potential within a Project footprint are typically based on biophysical factors (e.g., elevation, slope, aspect) and do not consider any cultural criteria or traditional knowledge. The consideration of traditional knowledge from local First Nations communities can greatly contribute to the development of these models of archaeological potential. For example, many traditional land use locations often correspond to archaeological sites (e.g., fish spawning areas, caribou migration routes, trails along sand ridges, and cabin and camps on rivers and lakes). Further to this, many existing models focus on where sites are likely to be preserved and/or sites that would contain robust material remains rather than a fair depiction of where land use actually occurred. For example, winter land use of peatlands is almost entirely ignored in most modeling.</p>
<b>Request:</b>	<p>a) Please add to Section 4.1[B], a condition whereby Imperial must describe local First Nation's preferred methods for how to include Traditional knowledge in baseline conditions of HRIA with regards to both locating and interpreting historic resource sites, and how they plan to implement these methods.</p> <p>b) Please add to Section 4.1[D], a condition whereby Imperial must describe First Nation's preferred methods for how to include Traditional knowledge in modeling of archaeological site potential, and how they plan to implement these methods.</p>

<b>3. Inclusion of First Nations perspective in determination of site significance</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Historic Resources, Section 4.2[B] Impact Assessment
<b>Preamble:</b>	Traditional knowledge should contribute to the determination of historical site significance (which is used to evaluate the nature and magnitude of Project impacts.) Often site significance is defined solely by archaeologists in the absence of First Nations

	input. This is inappropriate as archaeologists assess site significance from a western science lens grounded in a regional perspective. Traditional knowledge is more context specific and is able to provide deeper and more fulsome meaning. Where the regional perspective might be compared to an ‘outsiders’ perspective, First Nations can provide an ‘insiders’ view.
<b>Request:</b>	Please add to Section 4.2[B], a condition whereby Imperial must describe First Nation’s preferred criteria for defining historical site significance and how Imperial plans to implement these criteria.

<b>4. Consultation with First Nations on HRIAs</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 4, Historic Resources
<b>Preamble:</b>	Consultation with First Nations is only required if traditional use historical resources that are recorded in the Aboriginal Heritage Section of the Alberta Culture and Tourism database occur within the Project area <b>and</b> if the Alberta Heritage Section deems that consultation is necessary. However, many First Nations have chosen not to share their traditional use historical resource sites with the Alberta government.
<b>Request:</b>	Please include in Section 4, a requirement for Imperial, in direct consultation with local First Nations, to collaboratively develop a Historic Resources Management Plan that includes (in addition to the points outlined in #1 above): <ul style="list-style-type: none"> <li>a) Inclusion of First Nations members as part of field crews during collection of baseline data as well as any monitoring programs.</li> <li>b) Opportunities for First Nations to review and comment on draft HRIA reports.</li> <li>c) Community presentations of HRIA results.</li> <li>d) First Nations input into protocols for chance encounters of historical resources and associated education and training.</li> <li>e) Development of a process with First Nations to identify appropriate mitigation measures.</li> <li>f) First Nations perspective on appropriate buffers to be used for traditional use historical resource sites in constraints mapping.</li> </ul>

## 14.0 Socio-Economics

<b>I. CLFN-specific issues, concerns, and anticipated impacts</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 1[B], Public Engagement and Aboriginal Consultation
<b>Preamble:</b>	The pToR requests that Imperial “...describe the concerns and issues expressed by Aboriginal communities...” and “...how Aboriginal community input was incorporated into the Project, EIA development, mitigation, monitoring and reclamation.” Concerns, issues, and input vary widely between Aboriginal communities; therefore, the ToR needs to require Imperial to clearly identify specific concerns and issues expressed by CLFN and to demonstrate how CLFN input has been incorporated into the EIA and Project

	planning. The ToR also needs to require Imperial to clearly demonstrate how concerns, issues, and anticipated impacts identified by CLFN will be avoided, mitigated, and managed.
<b>Request:</b>	Please revise Section I [B] to request specification of Aboriginal communities: “Describe the concerns and issues expressed by <u>specific</u> Aboriginal communities and the actions taken to address those concerns and issues, including how <u>each</u> Aboriginal community’s specific input was incorporated into the Project, EIA development, mitigation, monitoring and reclamation.”

<b>2. CLFN-specific issues, concerns, and anticipated impacts</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 2.1[D]
<b>Preamble:</b>	Section 2.1[D] of the pToR requests that Imperial “describe the benefits of the Project, including jobs created, local training, employment and business opportunities, and royalties and taxes generated that accrue to... ..local and regional communities, including Aboriginal communities...”. Project-specific benefits can vary greatly between communities, as well as between Aboriginal communities. The ToR needs to require Imperial to clearly identify the benefits (jobs, local training, employment, and business opportunities) that are not only available to CLFN, but that CLFN can be expected to take advantage of.
<b>Request:</b>	Please revise Section 2.1[D] to request: <ul style="list-style-type: none"> <li>a) That benefits of the Project be described for “...local and regional communities, including <u>specific</u> Aboriginal communities...”</li> <li>b) That Imperial explain how they will ensure the effectiveness of any benefits for potentially-affected Aboriginal groups, including CLFN, and the measures that Imperial will take to ensure the benefits are culturally-appropriate.</li> </ul>

<b>3. Baseline Information – CLFN-specific indicators and information</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 7.1[A], Socio-Economic Baseline Information
<b>Preamble:</b>	Section 7.1[A] of the pToR requests that Imperial “describe the existing socio-economic conditions in the region and in the communities in the region”. This information must be collected and presented for each community in the Local Study Area (LSA) and Regional Study Area (RSA), including each Aboriginal community, in order for Imperial to adequately understand conditions (and differences in conditions) between individual communities, and to better assess Project effects to individual communities. Given the proximity of the proposed Project to CFLN Reserve lands, baseline information must also be collected for CLFN Reserves and members living on reserves. Further, indicators commonly used in socio-economic assessments are of greater relevance to non-Aboriginal communities; indicators that are relevant and appropriate to CLFN need to be identified and confirmed by CLFN (as well as by each potentially-affected Aboriginal group), and be used in the collection and presentation of baseline information.

<b>Request:</b>	The ToR must be revised such that it requires Imperial to: <ol style="list-style-type: none"> <li>a) Describe the existing socio-economic conditions in the region, in each of the communities in the region, and separately for CLFN communities and CLFN Reserve lands.</li> <li>b) Describe the existing socio-economic conditions, separately for CLFN communities and reserve areas, using indicators identified and confirmed by CLFN.</li> </ol>
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<b>4. Baseline information – Baseline conditions</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 7.1[A], Socio-Economic Baseline Information
<b>Preamble:</b>	Section 7.1[A] of the pToR requests that Imperial “Describe the existing socio-economic conditions in the region and in the communities in the region”. Current socio-economic conditions can be seen as a response, in part, to the effects of existing resource development projects in the region. Baseline information must identify how, and the extent to which, current conditions reflect changes in response to previous and existing developments. Further, baseline information must include a description of earlier baseline conditions to which CLFN wish to have effects assessed against.
<b>Request:</b>	The ToR should be revised such that it requires Imperial to include baseline information and a description of baseline conditions to which CLFN wish to have effects of the Project assessed against.

<b>5. Impact assessment – CLFN-specific indicators and assessment</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 7.2[A], Socio-Economic Impact Assessment
<b>Preamble:</b>	Section 7.2[A] of the pToR requests that Imperial describe the effects of construction and operation in six topic areas (a-f). Consistent with point # 3 above, Project-specific effects on individual communities and for each potentially-affected Aboriginal group, including CLFN communities and reserve areas, must be assessed. Further, indicators identified and confirmed by CLFN, and for which baseline data has been collected, need to be included in the assessment of effects specific to CLFN communities and reserve areas.
<b>Request:</b>	The ToR must require that Imperial: <ol style="list-style-type: none"> <li>a) Assess social and economic effects specific to CLFN communities, reserve areas, and members living on reserve lands.</li> <li>b) Assess social and economic effects, specific to CLFN communities, reserve areas, and members living on reserve lands, using indicators identified and confirmed by CLFN.</li> </ol>

<b>6. Impact assessment – camps</b>	
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<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 7.2[B], Socio-Economic Impact Assessment
<b>Preamble:</b>	Section 7.2[B] of the pToR requests that Imperial describe the socio-economic effects of any new or existing camp(s) required for the Project. Potentially-affected Aboriginal groups, including CLFN, need to better understand the potential effects of camps required for the Project on their members potentially residing in the camps, as well as on members residing on reserve.
<b>Request:</b>	The ToR must require that Imperial: <ol style="list-style-type: none"> <li>a) Describe camp policies.</li> <li>b) Identify and assess impacts of camps on potentially-affected Aboriginal communities, including CLFN communities and reserve areas.</li> </ol>

<b>7. Impact assessment – economic, social, and land use effects</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 7.2 [A, B, and C] Socio-Economic Impact Assessment
<b>Preamble:</b>	Section 7.2 of the pToR requests that Imperial describe the effects of construction and operation (7.2[A]), the socio-economic effects of any new or existing camps (7.2 [B]), and opportunities for Imperial to work with First Nations regarding employment, training needs, and other economic development opportunities (7.2[C]). Treated separately, these assessments will not provide the necessary context for CLFN to understand the potential economic, social, and land use effects of the Project, and the relationship between these. For Aboriginal communities, there is a greater need to examine both economic and social impacts that result from less access to and use of land and resources, as well as social impacts on individuals, families, and communities that may result from a changed relationship to the land. The socio-economic assessment must also clearly identify the extent to which Project-specific benefits will accrue to CLFN, and evaluate benefits to CLFN in light of predicted impacts. It is suggested that CLFN be involved in this evaluation, so that they may determine whether the Project stands to be of a net benefit or net loss to the Nations.
<b>Request:</b>	The ToR must require that Imperial: <ol style="list-style-type: none"> <li>a) Assess economic impacts to CLFN that result from changes in land use, such as reduced access to traditional lands and potential changes in harvested amounts, and loss of use of trapline #159.</li> <li>b) Assess social impacts (adverse and positive) to CLFN that result from Project-specific economic impacts (adverse and positive), including those identified in (a) above.</li> <li>c) Assess social impacts to CLFN that stem from a changed relationship to traditional lands.</li> <li>d) Provide opportunities for CLFN to be involved in the evaluation of Project impacts and benefits, so that they may determine whether the Project stands to be of net benefit or net loss to the CLFN.</li> </ol>



## 15.0 Traditional Land and Resource Use

\*Please note that while the GoA uses the terms ‘Treaty Rights’ and ‘traditional land use’, and the pToR uses the terms ‘Traditional Ecological Knowledge and Land Use’ CLFN, like many other First Nations, use the term ‘Treaty and Aboriginal Rights’ to refer to the practices, knowledge and values associated with their land use and continuation of their culture. These terms are used below.

<i>I. Traditional Ecological Knowledge and Land Use, assessment methodology</i>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 5, Traditional Ecological Knowledge and Land Use
<b>Preamble:</b>	<p>As outlined in <i>The Government of Alberta’s Policy on Consultation with First Nations on Land and Natural Resource Management, 2013</i> (the Policy), the provincial government will consult First Nations when a Crown decision has the potential to impact constitutionally protected Treaty Rights such as hunting, trapping and fishing, or traditional land use such as the use of burial grounds, gathering places or ceremonial sites (GoA, 2013). As outlined in the Policy, some procedural aspects of First Nations consultation can be delegated to proponents by the Crown, including “Identifying potential short- and long-term adverse project impacts” and “developing potential mitigation strategies to minimize or avoid adverse impacts” (ibid.). The duty to consult and the delegation of the assessment of impacts to First Nations Treaty and Aboriginal Rights is the primary driver behind the inclusion of the ‘Traditional Ecological Knowledge and Land Use’ section in the pToR.</p> <p>When the identification of adverse Project impacts to Treaty and Aboriginal Rights is delegated to the proponent, the information provided in the proponent’s EIA should assist the Crown in understanding these impacts. Frequently, as in the Imperial Cold Lake Midzaghe Project pToR, information about Project effects on Treaty and Aboriginal Rights can be found in two places in a proponent’s EIA: the Aboriginal Consultation section and the Traditional Ecological Knowledge and Land Use section. The Aboriginal Consultation section of the pToR (Section I [B]) does not directly address the requirement to identify short- and long-term adverse impacts to Treaty and Aboriginal Rights. The Traditional Ecological Knowledge and Land Use Section 5 [C] of the pToR requires the proponent to “<i>Determine the impacts of the Project on Aboriginal activities for traditional, medicinal and cultural purposes.</i>”</p> <p>Despite this requirement and other criteria outlined in Section 5, the pToR is not clear or explicit enough to enable proponents to provide the Crown with the information needed to fully understand potential adverse effects of the Project on Treaty and Aboriginal Rights, or to make a decision about the Project. The pToR refers proponents to Alberta Environment and Sustainable Resource Development’s <i>Guide to Preparing Environmental Impact Assessment Reports in Alberta</i> (the Guide), but this guide also provides very limited direction to proponents regarding the assessment of impacts to Aboriginal and Treaty Rights (AESRD, 2013). The Guide refers proponents to interim</p>

principles developed by the Canadian Environmental Assessment Agency for the integration of traditional ecological knowledge that do not address the assessment of project impacts to Treaty and Aboriginal Rights, and to a best practices handbook published in 2003 that also does not address the assessment of project impacts to Treaty and Aboriginal Rights (and was published before the Mikisew decision was made by the Supreme Court of Canada that addressed the duty to consult). This lack of clarity results in the great inconsistencies in how various proponents address this regulatory requirement.

The ToR needs to explicitly state the requirement for an assessment of impacts to the exercise of Treaty and Aboriginal Rights, rather than to “*Aboriginal activities for traditional, medicinal and cultural purposes*”. The requirements associated with this assessment need to be laid out clearly and in much greater detail, comparable to what is provided for the Environmental and Socio-Economic Assessments in the pToR and the Guide, and as is done in the *National Energy Board Filing Manual* for the assessment of effects on traditional land and resource use (National Energy Board 2015).

Baseline and Impact Assessment information should be required for this component of the EIA and the impact assessment should consider both Application and Planned Development cases, as is required for other environmental and socio-economic components. The planned development case and the assessment of cumulative effects is critical for understanding Project effects on Treaty and Aboriginal Rights, given the level of impacts presently experienced by CLFN, and the amount of existing and proposed development in the Cold Lake oil sands. Further, impacts should be considered to the future exercise of Treaty and Aboriginal Rights as part of the cumulative effects assessment/planned development case.

A requirement should be included in Section 5 of the ToR for Imperial to clearly outline the methodology used for the assessment of impacts to Treaty and Aboriginal Rights, including assessment areas, Project effects, residual effects characterisations, and significance thresholds.

### **References**

Alberta Environment and Sustainable Resource Development (AESRD). 2013. Guide to Preparing Environmental Impact Assessment Reports in Alberta – Updated March 2013. AESRD Environmental Assessment Team, Edmonton, Alberta. EA Guide 2009-2. 26 pp.

Government of Alberta (GoA). 2013. *The Government of Alberta’s Policy on Consultation with First Nations on Land and Natural Resource Management, 2013*. Available online at: <http://www.aboriginal.alberta.ca/documents/GoAPolicy-FNConsultation-2013.pdf?0.9275569916071316>.

National Energy Board. 2015. *National Energy Board Filing Manual*. Available online: <https://www.neb-one.gc.ca/bts/ctr/gnnb/flngmnl/flngmnl-eng.pdf>.

<b>Request:</b>	<p>a) Section 5 of the pToR should be revised to explicitly require Imperial to provide baseline information and complete an assessment of impacts to Treaty and Aboriginal Rights, including application and planned development cases.</p> <p>b) Impacts to the future exercise of Treaty and Aboriginal Rights must also be considered in the ToR, and Imperial should be required to outline the methodology used for this assessment.</p>
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<b>2. Traditional Ecological Knowledge and Land Use, assessment methodology – cultural impacts</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 5, Traditional Ecological Knowledge and Land Use.
<b>Preamble:</b>	Section 5 of the pToR does not clearly direct Imperial to assess and provide information to the Crown regarding cultural effects that CLFN and other Aboriginal groups could experience because of impacts to Treaty and Aboriginal Rights resulting from the proposed Project. Cultural impacts include, among other things, impacts to governance, language, the ability to transmit and retain traditional knowledge, and community and individual health and well-being.
<b>Request:</b>	Please add a clause to Section 5 requiring Imperial to assess cultural impacts to CLFN and other potentially affected Aboriginal groups resulting from the proposed Project. These assessments should be completed individually for each Aboriginal group.

<b>3. Traditional Ecological Knowledge and Land Use, assessment methodology</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 5[A], a) and b), Traditional Ecological Knowledge and Land Use
<b>Preamble:</b>	<p>The criteria in Section 5[A], a) and b) have a site-specific focus. As written these criteria may not provide the Crown with necessary information about:</p> <ul style="list-style-type: none"> <li>- frequency of use of these sites and areas,</li> <li>- temporal range of use (i.e., whether the sites were used in the past or are in use presently),</li> <li>- seasonality of site use,</li> <li>- how the sites are accessed,</li> <li>- the relative importance of various land use sites and areas to Aboriginal groups, and</li> <li>- contextual information about how these sites fit within an Aboriginal group's seasonal round of past, present and future land use and exercise of Rights.</li> </ul> <p>This lack of critical information will prevent the Crown from fully understanding the potential Project impacts on CLFN's Treaty and Aboriginal Rights, and will make it difficult to determine effective mitigation to protect these sites. These limitations could prevent the Crown from being able to make a regulatory decision on the Project due to insufficient information regarding impacts to First Nations' Treaty and Aboriginal Rights.</p>

	In addition, while CLFN has said that it does not accept Alberta’s Aboriginal Consultation Office’s (ACO) First Nations Consultation Policy, the Policy describes the Crown’s commitment to consult on both project specific impacts and non-site specific impacts (though the latter is to take place through other undefined processes). Information gathered about non-site specific impacts remains essential to informing Crown consultation processes and decision making regarding all of the potential impacts associated with the Project.
<b>Request:</b>	Section 5[A], a) and b) of the pToR needs to be revised to direct Imperial to provide contextual information to the Crown in relation to traditional land use areas and sites, and to use this contextual information in their assessment. A clause should be added to Section 5[A] directing Imperial to provide: “contextual information regarding identified traditional land use areas and sites, such as frequency, seasonality and duration of use, and the relative importance of each site or area”.

<b>4. Traditional Ecological Knowledge and Land Use, assessment methodology</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 5[A], c), i) and ii), Traditional Ecological Knowledge and Land Use
<b>Preamble:</b>	The pToR requires Imperial to provide some degree of information about the availability of resources and access, but does not require information from Imperial about environmental and social <u>conditions</u> that could impact individuals engaging in the exercise of Treaty and Aboriginal Rights. These conditions may include visual aesthetics, noise, air quality, other land users, traffic, perceptions of personal safety and/or contamination, lack of time due to participation in Project wage employment or training opportunities, etc.
<b>Request:</b>	Section 5[A] c) i) and ii) of the pToR needs to be revised so that Imperial is required to clearly outline Project effects on <u>conditions</u> that could impact the exercise of Treaty and Aboriginal Rights. For example, a clause should be added to Section 5[A] c) to require Imperial to provide “an assessment of Project effects on factors that may influence the exercise of Treaty and Aboriginal Rights, such as visual aesthetics, noise, air quality, presence of other land users, traffic, perceptions of compromised personal safety and/or contamination, and lack of time due to participation in Project wage employment or training opportunities.”

<b>5. Traditional Ecological Knowledge and Land Use, assessment methodology</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 5 [A], c), i) and ii), Traditional Ecological Knowledge and Land Use
<b>Preamble:</b>	The pToR directs Imperial to provide information about the availability of resources “in the identified traditional land use areas” and the availability of access “to traditional lands in the Project area.” As written, these criteria are limited and vague and need to be expanded to allow for the consideration of effects across a broader area, such as the entirety of an Aboriginal group’s traditional territory. At minimum, this area should be

	large enough to enable the Crown (and Aboriginal groups) to adequately understand and assess Project impacts on traditionally used resources and land access beyond just individual sites/areas identified as impacted by the Project or those within the Project Area. This will also enable understanding of Project effects on the abundance and movement of resources (particularly wildlife) throughout an Aboriginal group's traditional territory or other defined land use areas.
<b>Request:</b>	The criteria in Section 5[A] c) i) and ii) of the pToR need to be reworded to require Imperial to provide information about availability of resources and access in an RSA identified through consultation with CLFN.

<b>6. Traditional Ecological Knowledge and Land Use, assessment methodology</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 5[A]c)iii), Traditional Ecological Knowledge and Land Use
<b>Preamble:</b>	In Section 5[A]c)iii) the pToR directs Imperial to provide a discussion of “ <i>Aboriginal views on land reclamation.</i> ” However, it is unclear whether the Crown is asking the proponent to provide a general discussion of previously documented/publicly available Aboriginal views on land reclamation (and, if so, from what Aboriginal groups?), or a discussion of the views held by potentially impacted Aboriginal groups that have been engaged by the proponent in Project consultation. It is also unclear whether this clause is meant: 1) to address a consultation requirement for Aboriginal groups to have the opportunity to comment on the proponent’s reclamation plans; 2) for the proponent to summarize the views that have been provided to them during Project consultation efforts and through traditional land use studies; or 3) for the proponent to demonstrate how Aboriginal groups’ views on reclamation have been incorporated into Project reclamation plans.  This clause needs to be clarified and strengthened so that the Proponent is required to directly and meaningfully involve Aboriginal groups in reclamation planning, and demonstrate to the Crown how the Project reclamation plans will return the Project area to conditions that are suitable for the exercise of Treaty and Aboriginal Rights.
<b>Request:</b>	<ul style="list-style-type: none"> <li>a) Section 5[A] c) iii) should be revised to state: “Provide a discussion of: a) how Aboriginal groups were involved in land reclamation planning; b) recommendations provided by Aboriginal groups during Project consultation and assessment activities regarding land reclamation; and c) how and where these recommendations have been included in Project reclamation plans.”</li> <li>b) A further clause should be added to this Section as follows: “Demonstrate how Project reclamation plans will ensure the land is returned to a state that supports the exercise of Treaty and Aboriginal Rights.”</li> </ul>

<b>7. Traditional Ecological Knowledge and Land Use, assessment methodology</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 5, Traditional Ecological Knowledge and Land Use.

<b>Preamble:</b>	Despite the lack of clear regulatory requirements, EIAs frequently include some assessment of effects on what is most commonly referred to as ‘traditional land use’. These assessments frequently take a ‘pan-Aboriginal’ approach and a single assessment is made for effects of the Project on all Aboriginal groups that may be directly affected by the Project. This approach fails to consider the differences between various First Nations and Métis communities and their histories, rights and land use, and can lead to an underestimation, exaggeration or incorrect evaluation of the Project effects on each individual group.
<b>Request:</b>	<ul style="list-style-type: none"> <li>a) Section 5 of the pToR should be revised to direct Imperial to individually assess impacts to Treaty and Aboriginal Rights for <u>each</u> Aboriginal group that Imperial has been directed to consult on the Project.</li> <li>b) Given CLFN’s immediate proximity to the Project Area, their past and present extensive use of the Project Area, and their identification of the Project Area as a key location for present and future exercise of Treaty and Aboriginal Rights, impacts to CLFN must be individually, thoroughly and accurately assessed in the EIA.</li> </ul>

<b>8. Traditional Ecological Knowledge and Land Use, assessment methodology</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 5, Traditional Ecological Knowledge and Land Use.
<b>Preamble:</b>	<p>In the <i>Guide to Preparing Environmental Impact Assessment Reports in Alberta</i> (AESRD 2013), proponents are directed to “provide data, results and analysis” for a project area, LSA and RSA. The assessment of impacts to Aboriginal and Treaty Rights can be conducted using an RSA that is too broad and thereby underestimates significance of effects. Similarly, assessments to Aboriginal and Treaty Rights can be completed using an LSA that is too narrow and thereby fails to assess impacts to sites and areas that are close enough to Project activities that direct effects are experienced by First Nations land users.</p> <p><b>References</b>          Alberta Environment and Sustainable Resource Development (AESRD). 2013. <i>Guide to Preparing Environmental Impact Assessment Reports in Alberta – Updated March 2013</i>. AESRD Environmental Assessment Team, Edmonton, Alberta. EA Guide 2009-2. 26 pp.</p>
<b>Request:</b>	<ul style="list-style-type: none"> <li>a) The pToR should direct the proponent to use an LSA for the assessment of Treaty and Aboriginal Rights that takes into account factors that could influence the exercise of Rights, such as visual aesthetics, noise, air quality, presence of other land users, etc.</li> <li>b) The pToR should direct the proponent to use an RSA that is determined in consultation with CLFN and other potentially-affected Aboriginal groups.</li> </ul>

<b>9. Traditional Ecological Knowledge and Land Use, assessment methodology</b>
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<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 5 [A] b), Traditional Ecological Knowledge and Land Use
<b>Preamble:</b>	The pToR directs the proponent to provide “ <i>a map of cabin sites, spiritual sites, cultural sites, graves and other traditional use sites considered historic resources under the Historical Resources Act (if the Aboriginal community or group is willing to have these locations disclosed), as well as traditional trails and resource activity patterns.</i> ” It is unclear why the use sites are restricted to those identified as historic resources. Many sites, such as campsites used while hunting, may be regularly used or have historic importance to First Nations but do not qualify as historic resources under the <i>Historical Resources Act</i> .
<b>Request:</b>	Please remove the portion of Section 5 [A] b) referring to historic resources.

<b>10. Traditional Ecological Knowledge and Land Use, assessment methodology</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 5, Traditional Ecological Knowledge and Land Use.
<b>Preamble:</b>	Imperial has existing operations within their Cold Lake Lease and the Midzaghe Project Area, and it is our understanding that Imperial has previously consulted with Aboriginal groups (including CLFN) in this area about Aboriginal and Treaty Rights. Information that may be in Imperial’s possession based on these past consultation and assessment activities should not be used in the assessment of Project effects on Treaty and Aboriginal Rights without the prior and formal consent of each Aboriginal group. Some of the information about Aboriginal and Treaty Rights that is contained within EIAs prepared for Imperial’s other regional projects is now out of date (as are the assessment methodologies used at the time) and a current and Project-specific assessment is required for the proposed Midzaghe Project.
<b>Request:</b>	Section 5 of the ToR should include a requirement for Imperial to conduct a Project-specific assessment of impacts to CLFN’s Aboriginal and Treaty Rights using information that has been provided or released by CLFN specific to the Midzaghe Project.

<b>11. Traditional Ecological Knowledge and Land Use, integration</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 5[B], Traditional Ecological Knowledge and Land Use
<b>Preamble:</b>	Section 5[B] of the pToR directs Imperial to “ <i>Describe how Traditional Ecological Knowledge and Traditional Land Use information was incorporated into the Project, EIA development, the conservation and reclamation plan, monitoring and mitigation.</i> ” This criteria should be more specific, and direct the proponent to show how traditional ecological knowledge and land use were considered not only in scoping the EIA, but also in the environmental and socio-economic baseline information and impact assessments.
<b>Request:</b>	Please revise Section 5[B] of the ToR to read: “ <i>Describe how Traditional Ecological Knowledge and Traditional Land Use information was incorporated into the Project, EIA</i> ”

	development, environmental and socio-economic baseline and impact assessments, the conservation and reclamation plan, monitoring and mitigation.”
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<b>12. Traditional Ecological Knowledge and Land Use, Mitigation, follow up and monitoring</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 5[C], Traditional Ecological Knowledge and Land Use
<b>Preamble:</b>	<p>The pToR directs Imperial to identify “...possible mitigation strategies” for “impacts of the Project on Aboriginal activities for traditional, medicinal and cultural purposes.” It is unclear why a discussion of mitigation is noted within Section 5 of the pToR instead of being addressed in Section 8, as it is for the environmental and socio-economic assessments. It is also unclear why the term “possible” is used, instead of the word “planned” as is used in Section 8.</p> <p>In order for the Crown to achieve a clear picture of residual Project impacts, mitigation for each Project effect on Treaty and Aboriginal Rights must be outlined by Imperial. Given the complexity inherent in mitigating effects on Treaty and Aboriginal Rights, indication of the proven effectiveness of proposed mitigation should also be required of the proponent. Finally, something more robust than an ‘adaptive management’ approach should be required of the proponent in assessments where there is low confidence in prediction of effects (as is usually the case for the assessment of effects on Treaty and Aboriginal Rights), and for mitigation of unforeseen events that may occur during Project operations. A high level of detail should be required of the proponent in outlining mitigation, monitoring and follow-up with regards to Project effects on Treaty and Aboriginal Rights.</p>
<b>Request:</b>	<ol style="list-style-type: none"> <li>a) The wording in Section 5[C] should be revised from ‘possible mitigation’ to ‘planned mitigation’.</li> <li>b) Mitigation and monitoring of effects on Treaty and Aboriginal Rights should be addressed under Section 8 of the ToR.</li> <li>c) The ToR should require Imperial to clearly outline the steps that they will take to demonstrate that they have enacted all of the planned mitigation strategies related to effects on Treaty and Aboriginal Rights.</li> <li>d) The ToR should require Imperial to measure the effectiveness of all planned mitigation measures and to undertake monitoring of effects on Treaty and Aboriginal Rights.</li> <li>e) The ToR should require Imperial to provide a plan to mitigate any unforeseen effects of the Project on Treaty and Aboriginal Rights.</li> </ol>

<b>13. Traditional Ecological Knowledge and Land Use, timing of regulatory application</b>	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 5, Traditional Ecological Knowledge and Land Use.
<b>Preamble:</b>	EIAs are regularly submitted to the Crown prior to the completion of what are commonly referred to as “project-specific Traditional Land Use (TLU) studies.” These studies are often undertaken by impacted Aboriginal groups with support from the proponent and are the most relevant source of information that a proponent can use in their assessment of project effects on Treaty and Aboriginal Rights. Unfortunately,



	<p>these studies are rarely completed in time to be used in the proponent’s impact assessment and application. This problem of timing prevents proponents from being able to accurately and comprehensively assess impacts to Treaty and Aboriginal Rights, because detailed, current and validated information about the exercise of Rights is not readily available in the public domain. Also, when the EIA is completed in advance of project-specific TLU studies being done, information about traditionally used vegetation, wildlife and fish species cannot be accurately considered and traditional land use sites and areas cannot be used as receptors in health, noise and air quality assessments.</p> <p>All of these issues reduce a proponent’s ability to accurately assess impacts on Treaty and Aboriginal Rights, which means the Crown is not able to make an informed approval decision. This timing problem also frequently results in several rounds of supplemental information requests to proponents regarding project-specific traditional land use studies and related assessment and consultation requirements.</p>
<p><b>Request:</b></p>	<ul style="list-style-type: none"> <li>a) The ToR should require Imperial to work with Aboriginal groups to ensure the timely completion of TLU studies specific to the Project and each Aboriginal group so that information from these studies can be used in the EIA, including the assessment of adverse Project effects on Treaty and Aboriginal Rights. Imperial should be required to ensure that every Aboriginal group has sufficient capacity and time to complete such a study.</li> <li>b) The ToR should require that Imperial’s assessment of impacts to Treaty and Aboriginal Rights be based on Project-specific information provided by Aboriginal groups through Project-specific TLU studies or through another means determined in consultation with each Aboriginal group.</li> <li>c) Given the proximity of the proposed Project to CLFN Reserves, CLFN’s extensive past and present use of the Project area (as evidenced by documented camps, cabins, trails, fishing, hunting and berry picking areas, as well as a long-standing trapline held by a CLFN member), and the identified importance of the Project area to CLFN’s continued exercise of Aboriginal and Treaty Rights, the ToR should require that Imperial base their assessment of Project impacts to CLFN Treaty and Aboriginal Rights on information provided by CLFN to Imperial through a project-specific TLU study or another means determined through consultation with CLFN.</li> </ul>

## 16.0 Cumulative Effects

<p><i>I. Lack of guidance on cumulative effects assessment</i></p>	
<p><b>Reference:</b></p>	<p>Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 2.2 [A], Project Description, Constraints</p>
<p><b>Preamble:</b></p>	<p>The pToR provides minimal guidance to Imperial on how they should prepare the cumulative effects assessment. Section 2.2[A] only mentions in general terms that the</p>

	<p>proponent should assess “cumulative environmental impacts in the region” and “cumulative social impacts in the region”. The word cumulative is mentioned only three more times in the pToR, once related to traffic, and twice related to water supply. This lack of guidance on cumulative effects and what is expected from the proponent is surprising in light of the recent attention that cumulative effects in the oil sands region of Alberta has received.</p> <p>Key criticisms of the environmental assessment process in the oil sands region submitted by the Office of the Auditor General of Canada (2011) are that:</p> <ol style="list-style-type: none"><li>1) “Incomplete environmental baselines and environmental data monitoring systems needed to understand changing environmental conditions in northern Alberta have hindered the ability of Fisheries and Oceans Canada and Environment Canada to consider in a thorough and systematic manner the cumulative environmental effects of oil sands projects in that region.”</li><li>2) “..regulators did not adapt the terms of reference for subsequent environmental assessments as a means of reducing gaps in the information needed to fully consider changing environmental conditions”.</li></ol> <p>Additional shortcomings of the regulators’ (both provincial and Federal) approaches to understanding the cumulative effects in the oil sands region of Alberta are apparent in another recent report submitted by The Office of the Auditor General of Alberta (2014) regarding the joint Canada-Alberta plan for monitoring oil sands development. The Auditor General report emphasized the need for improved analysis of results and reporting and highlighted deficiencies that: “may jeopardize Alberta’s Environmental Monitoring, Evaluation, and Reporting Agency (AEMERA) ability to monitor the cumulative effects of oil sands development and report to Albertans on the condition of Alberta’s environment in the oil sands and when impacts on the environment exceed accepted limits.”</p> <p>These weaknesses extend to other regional frameworks and plans, such as the Lower Athabasca Regional Plan (LARP) and Biodiversity Monitoring Framework (BMF), which will utilize AEMERA for provincial environmental monitoring. CLFN have previously expressed concerns that the BMF and LARP do not adequately demonstrate how Treaty and Aboriginal Rights will be protected under these regional plans.</p> <p>Further, the Jackpine Mine Expansion Project Joint Review Panel (JPM-JRP 2013) concluded that: “the cumulative effects assessment should include a pre-industrial case to allow the Panel to take into account the effects that may have already been experienced prior to the Project”. The Review Panel (JPM-JRP 2013) also concluded that they had “concerns with some of the methods used by Shell to assess effects on terrestrial resources and Aboriginal TLU, rights, and culture”. The pToR provides a similar lack of guidance to Imperial for the proposed Midzaghe Project as was provided to Shell on the Jackpine Mine Extension. Rather than simply following the standard</p>
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	<p>outdated template for Terms of Reference, the current pToR should be amended so as to assist regulators and Aboriginal land users to make informed decisions.</p> <p><b>References</b></p> <p>Auditor General Alberta. 2014. Report of the Auditor General of Alberta. October 2014. Website: <a href="http://www.oag.ab.ca/webfiles/reports/October%202014%20Report.pdf">http://www.oag.ab.ca/webfiles/reports/October%202014%20Report.pdf</a>. Accessed October 2014.</p> <p>JPM-JRP (2013). Report of the Joint Review Panel. Shell Canada Energy. Jackpine Mine Expansion Project Application to Amend Approval 9756. Fort McMurray Area, July 9, 2013. 2013 ABAER 011, CEAA Reference No. 59540</p> <p>Office of the Auditor General of Canada (2011). Report of the Commissioner of the Environment and Sustainable Development: Chapter 2 Assessing Cumulative Environmental Effects of Oil Sands Projects. <a href="http://www.oag-bvg.gc.ca/internet/English/parl_cesd_201110_e_35765.html">http://www.oag-bvg.gc.ca/internet/English/parl_cesd_201110_e_35765.html</a></p>
<b>Request:</b>	<p>The ToR requires:</p> <ul style="list-style-type: none"> <li>a) A section that explicitly describes the requirements for how cumulative effects for each discipline should be evaluated by Imperial, describing environmental change from past to present, how the project will contribute to cumulative effects, and what baselines and environmental data are needed to understand changing environmental conditions in the region.</li> <li>b) An explicit requirement for Imperial to include a pre-industrial case to take into account the effects that may have already been experienced prior to the Project.</li> <li>c) An explicit requirement for Imperial to assess cumulative effects on terrestrial resources and Aboriginal TLU, rights, and culture in a thorough and systematic manner.</li> </ul>

## 17.0 Mitigation and Monitoring

<b>1.</b> The pToR does not require Imperial to provide evidence that proposed mitigation will be effective	
<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 8.0, Mitigation Measures
<b>Preamble:</b>	In Section 8, Imperial is required to provide a discussion of the effectiveness of proposed mitigation. However, as currently worded, the pToR does not provide sufficient guidance to Imperial in terms of providing the type of information that is required for regulators or a review panel to make informed decisions about a proposed Project. For example, the Jackpine Mine Expansion Project Joint Review Panel (JPM-JRP 2013) concluded that Shell’s EIA lacked “... <i>proposed mitigation measures that have been proven to be effective.</i> ...” Another similar example is from the Teck Resources Limited regulatory review where Environment and Sustainable Resources Development (ESRD;

	<p>now Alberta Environment and Parks (AEP)) and the Canadian Environmental Assessment Agency (CEAA) noted in their joint submission (SIR2 Response 107, Page 336-339; ESRD and CEAA (2013)): “Teck seems to suggest that reclamation is predicted to be fully successful, and that wildlife populations will return to a pre-disturbance level. The available peer-reviewed and regional literature discussed by Teck does not seem to support this.” The regulators go on to ask that Teck: “Provide further evidence from scientific, peer-reviewed and regional literature that supports Teck’s claim...”</p> <p>These recent examples from relevant Alberta regulatory processes demonstrate that proponents did not receive sufficient guidance in past ToRs, resulting in incomplete EIAs that did not provide the necessary information to regulators to make informed decisions. As the Office of the Auditor General of Canada (2011) noted, regulators must adapt the ToRs so as to close the information gaps that have been identified in past proceedings. The current pToR requires more explicit language to request that Imperial provide scientifically credible evidence to support all claims that their proposed mitigation will be effective. Additionally, the final ToR should include specific requirements for Imperial to monitor the effectiveness of any mitigation strategies implemented to reduce/eliminate impacts on CLFN’s ability to exercise their Aboriginal and Treaty Rights (for complete discussion on mitigation and monitoring specific to Aboriginal and Treaty Rights see Section 15, Request #12).</p> <p><b>References</b></p> <p>ESRD and CEAA (2013). Teck Resources Limited Frontier Oil Sands Mine Project. ESRD and CEAA Supplemental Information Request No. 3, submitted by e-mail May 14, 2013.</p> <p>JPM-JRP (2013). Report of the Joint Review Panel. Shell Canada Energy. Jackpine Mine Expansion Project Application to Amend Approval 9756. Fort McMurray Area, July 9, 2013. 2013 ABAER 011, CEAA Reference No. 59540</p> <p>Office of the Auditor General of Canada (2011). Report of the Commissioner of the Environment and Sustainable Development: Chapter 2 Assessing Cumulative Environmental Effects of Oil Sands Projects. <a href="http://www.oag-bvg.gc.ca/internet/English/parl_cesd_201110_e_35765.html">http://www.oag-bvg.gc.ca/internet/English/parl_cesd_201110_e_35765.html</a></p>
<p><b>Request:</b></p>	<p>Under Section 8 of the ToR, Imperial must be required to provide:</p> <ol style="list-style-type: none"> <li>a) Scientifically credible evidence (in the form of peer-reviewed literature or empirical data) to support all claims of effectiveness of proposed and planned mitigation measures.</li> <li>b) Specific examples that show empirical evidence for mitigation effectiveness from the same region of Alberta, preferably from other similar Imperial projects in the region.</li> <li>c) See also Section 15, Request #12 b) to e).</li> </ol>

**2. Lack of scientifically credible evidence provided in monitoring programs**

<b>Reference:</b>	Imperial Cold Lake Midzaghe Project, pToR, (July 24, 2015), Section 10.0, Monitoring
<b>Preamble:</b>	<p>Gaps in our understanding of environmental change need to be filled by monitoring programs that measure change with scientific rigor. While there are well-intended criteria in Section 10 of the pToR to measure the effectiveness of mitigation, these requests are not explicit enough to demonstrate that Imperial will be capable of measuring the effectiveness of mitigation. The current pToR requirements in Section 10 will result in Imperial simply providing vague and conceptual information which does little to inform regulators and communities about how effectiveness of mitigation will be measured.</p> <p>Taking guidance from CEAA policies (2009, 2011), and from the Office of the Auditor General of Canada (2011), baseline data need to be collected prior to construction, and monitoring data needs to be collected and analyzed in a scientifically rigorous manner such that environmental change can be reliably and accurately measured. In accordance with the findings of the Office of the Auditor General (2011), the regulatory review process must be informed by the concrete methodological details and objectives of monitoring programs so as to make informed decisions about a proposed Project. Imperial has operated in the Oil Sands Region for decades and it is expected that during this time they have conducted monitoring to measure mitigation effectiveness, as currently required by regulators. For that reason, Imperial should be able to demonstrate the scientific rigor, or discuss the lack thereof, of all past and current monitoring programs. Although it is understood that detailed Project-specific monitoring plans are not required by regulators at the EIA stage, with the operational experience of Imperial it is not acceptable that the regulatory review process be informed by conceptual monitoring programs, as has been repeatedly done in past regulatory reviews. Information about how Imperial will design its monitoring programs in order to actually measure mitigation effectiveness with scientific rigor is required. Imperial should be required to append examples of past or current monitoring programs from other regional approved projects. Additionally, where past monitoring programs were not sufficiently rigorous enough to satisfy the objectives of CEAA policies (2009, 2011), Imperial should be required to propose approaches and methodologies that would improve these programs.</p> <p><b>References</b></p> <p>CEAA (Canadian Environmental Assessment Agency). 2009. Operational Policy Statement, Adaptive Management Measures under the Canadian Environmental Assessment Act. © Her Majesty the Queen in Right of Canada, 2009. Catalogue No.: 978-1-100-12062-1; ISBN: En106-83/2009E-PDF</p> <p>CEAA (Canadian Environmental Assessment Agency). 2011. Operational Policy Statement; Follow-up Programs under the Canadian Environmental Assessment Act; Original: October 2002; Update: December 2011; © Her Majesty the Queen in Right of Canada, 2011. Catalogue No.: En106-78/2011E; ISBN: 978-1-100-19750-0.</p>

	<p>Office of the Auditor General of Canada (2011). Report of the Commissioner of the Environment and Sustainable Development: Chapter 2 Assessing Cumulative Environmental Effects of Oil Sands Projects. <a href="http://www.oag-bvg.gc.ca/internet/English/parl_cesd_201110_e_35765.html">http://www.oag-bvg.gc.ca/internet/English/parl_cesd_201110_e_35765.html</a></p>
<p><b>Request:</b></p>	<p>Section 10 of the ToR should be revised to include a requirement for Imperial to:</p> <ul style="list-style-type: none"> <li>a) Include in the EIA, past and/or current monitoring programs from other regional approved Imperial projects as examples for each discipline.</li> <li>b) Demonstrate the scientific rigor and success of the past programs in terms of measuring mitigation effectiveness and confirming EIA predictions.</li> <li>c) Propose improvements to past monitoring programs that have not been rigorous enough to satisfy CEEA policies on follow-up programs and outline how the improvements will be implemented for the proposed Project.</li> <li>d) See also Section 15, Request #12 b) to e).</li> </ul>

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**From:** Chris Goss <wateradvent@yahoo.ca>  
**Sent:** Friday, September 25, 2015 8:21 PM  
**To:** AEREnvironmental Assessment  
**Cc:** Alan J. Kennedy; Natasha M. Pyfrom; Marie Lake; Slugger99(Don Heigh); AEP Minister  
**Subject:** Imperial Oil Cold Lake Expansion – Midzaghe Project

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Imperial Oil Cold Lake Expansion – Midzaghe Project  
Proposed Terms of Reference  
September 23, 2015-09-23

I would like you to consider the following additions or amendments to the PTOR:

#### Section 2.2

[A] f) the environmental setting, with specific emphasis on the Marie Lake recreation area, that is in the immediate vicinity.

#### Section 2.5 Air Emissions Management

[B] n) heavy metal emissions produced in flare stack and/or co generation operations, with special respect to mercury.

Comment: - Environment Canada Researchers Find High Mercury Levels Around Alberta Oil sands (Indra Das January 3, 2014) Jane Kirk presented at the SETAC conference November 2013, that mercury has risen 16 times the background level in areas around oil sand development. The Scientists said that mercury is the number one concern when looking at toxins released by oil sands production with indications that mercury is building up in local wildlife. This backed by new fish consumption report heard on the radio putting a fish species from Marie Lake on the list for mercury contamination along with fish species from other area lakes. Leads to our concern with the air borne emissions of mercury and other heavy metals into the area.

#### Section 2.7 Wastewater Management

[B] d) plans for the containment, collection and safe disposal of heavy metals so they do not leach into the groundwater.

#### Section 3.1.2 Impact Assessment

[A] g) identify the regions that will now be downwind of these operations and how they will impact the residents, and recreational users, both due to health and nuisance.

#### Section 3.4 Surface Water Quality

##### 3.5.2 Impact Assessment

[D] Identify plans to offset the build-up of nitrogen, phosphorous, and sulphurous compounds that will act as fertilizer for weed growth, in the local lakes. The increase in weeds is detrimental to water quality for swimming and other recreational sports.

#### Section 5 Traditional Ecological Knowledge and Land Use

[D] Determine the impact of the project on recreational lake use by cabin and camping sites. Weed propagation, fish consumption warnings increasing, water levels and the mitigation strategies to reduce these impacts.

#### Section 8 Mitigation Measures

[C] Identify the mitigation in case of a pipeline spill, wellhead blow out, resulting in spilt crude oil entering the environment in relation to the various seasons.

Comment: Wellhead blow out and releases have been reported and continued until the pressure in the well was reduced, this has happened in the summer and winter over areas of water. Pipeline bursts have been in the news lately.

Thank you for taking the time to consider my concerns with the expansion of the Imperial Cold Lake expansion. I am concerned with the conservation of the environment through working with Imperial to realize the latest effects of oil sand production and transportation problems that have come to my attention. The mercury can be found in heavy oil fraction of the raised oil, but it can also be in the flare gas and gas used for cogeneration, and in the water that comes in contact with the oil. Being a long term recreational user of Marie Lake, I have noticed an increase in weed growth ion the last few years, this can be attributed to a lot of reasons, but the production of sulphur, nitrogen and phosphorous by the oil sand this can be a contributing fertilizer effect. The final concern is, is Marie Lake now in the wind plume of the air emissions and will this have an adverse affect on quality of use. In the initial Imperial set up I know they had a mobile air monitoring station set up by the cabin lots. Will a similar approach be taken this time?

Chris Goss  
Marie Lake Cabin Owner

1932 Lakewood Rd S  
Edmonton. AB  
T6K 3W8

780-450-5433

CC  
MLAWS  
Shelter Bay  
Minister of Alberta Environment



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**From:** Keith Hamilton <screagle@telus.net>  
**Sent:** Sunday, September 27, 2015 2:51 PM  
**To:** AEREnvironmental Assessment  
**Subject:** FW: Imperial Oil Midzaghe Project  
**Attachments:** Cold\_Lake\_Midzaghe\_PTOR.pdf

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

I misspelt your email address the 1<sup>st</sup> attempt

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**From:** Keith Hamilton [<mailto:screagle@telus.net>]  
**Sent:** Sunday, September 27, 2015 11:42 AM  
**To:** 'AEREnvironmental.Assessment@aer.ca'  
**Cc:** 'alan.j.kennedy@esso.ca'; 'natasha.m.pyfrom@esso.ca'; 'susan.e.scott@exxonmobil.com'; 'communitygiving@davidsuzuki.org'  
**Subject:** Imperial Oil Midzaghe Project

Attention: Alan Kennedy & those concerned

RE: Imperial Oil Resources Limited  
Cold Lake Midzaghe Project

Regarding this project, I have been on Imperial Oils website related to this project and cannot find any information indicating just exactly where they intend on drawing their water for steam for this project

For their current water supply, IORL currently either uses Cold Lake water or draws from the “Beverly” fresh water aquifer that many farmers and residents use as their water source and have been using long before Imperial arrived on site. Over the years, they have had a significant impact on our water levels and the arsenic levels bounce all over the place due to the increased heat and movement in the aquifer due to Imperial’s usage. I strongly oppose any further usage of fresh water aquifers or ground water for any steam assisted production and strongly advise the AER to ensure that IORL and other oil companies start using brackish water as other “environmentally conscious producers” do. Our lakes and water table have been severely impacted over the years due to using our most precious life sustaining resource - our fresh water, for oil companies & government monetary gain. This is nothing short of disastrous and environmental genocide.

It’s important that the AER look after our natural resources and the residents that live near these projects. Once these oil companies have drained our oil, dried up our aquifers and lakes, they will pull out, claiming they have spent their last dollar trying to stay profitable and the province will be left holding the bag as they currently are with our “Orphan Well program”. It’s a sad day when the public has to get a fire burning on their own dollar and time, while Big Oil pays big bucks to manipulate the system so they get what they want because our paid officials ( AER) don’t do their job!

I have been making my living in the Oil Industry for 42 years working directly on the wells. I am not some farmer, Native Canadian or minority who has nothing better to do but complain loud enough that my palm gets greased. I see and know what’s happening. I just want what’s right for our future generations and the survival of our environment. We need to find a balance before it’s too late and it’s my opinion that we are getting close to the point of no return. We don’t need to make all our profit right now! When is enough, enough?

Once again, I suspect, that the public will also be paying the bill so that Imperial can tie in more co-generators and sell power, making profit off publicly paid for power lines. Who is paying for these power lines? When Imperial Oil tied in Nabiye, the public paid heavily for those lines and Imperial Oil is the main one that profited.

Unfortunately I was not able to make it to the August 25<sup>th</sup> open house at the Riverhurst Community Hall and would like to know when they plan the next open house? Would it be possible to be placed on an email list for notification?

I have also attached a PDF of the Project for the Suzuki Foundation to review.

***Keith Hamilton***  
***780-812-5121***  
***[screagle@telus.net](mailto:screagle@telus.net)***  
***Hamilton***  
***Downhole***  
***Tools***  
***Inc***

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**From:** hmartin <hmartin@telusplanet.net>  
**Sent:** Monday, September 28, 2015 9:37 AM  
**To:** AEREnvironmental Assessment  
**Subject:** Fwd: Comments on IOL Midzaghe Project/PTOR

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

----- Forwarded Message -----

From: "hmartin" <[hmartin@telusplanet.net](mailto:hmartin@telusplanet.net)>  
To: "alan j kennedy" <[alan.j.kennedy@esso.ca](mailto:alan.j.kennedy@esso.ca)>  
Cc: "AEREnvironment Assessment" <[AEREnvironment.Assessment@aer.ca](mailto:AEREnvironment.Assessment@aer.ca)>  
Sent: Monday, September 28, 2015 9:27:41 AM  
Subject: Comments on IOL Midzaghe Project/PTOR

H & M Martin  
40 Circlewood Drive  
Sherwood Park, AB  
T8A 0K6  
Sep 28, 2015

Alan Kennedy

Manager, Regulatory & Environment

Re: Project Notification of Imperial Oil Cold Lake Operations Expansion  
Proposed in-situ SA-SAGD project

Dear Alan,

Thank you for the enclosure describing Imperial Oil's proposed expansion. Your first paragraph is rather confusing describing "the project" as encompassing over 85,000 acres which includes Ranges 2, 3 and 4.

It would appear instead to be a normal sized plant expansion somewhere southwest of Nabiye; we would like to know the exact location of the main plant, i.e. legal description or coordinates, including well pads, sludge ponds, ground water and disposal wells. As well, we would like to know the distance between this proposed location and the closest location of Marie Creek and the coordinates. Detailed maps showing the topography of this new project area would be helpful in determining possible spill routes.

We would like to know what your definitions of "within" and "adjacent" are with respect to our land holdings in the area. Please note that we own the two parcels of land (not leased) and please correct one of the legal descriptions to SE 1-65-3-W4M. Actually, with all the past correspondence between us and IOL, it is surprising that this information was not forwarded to you.

We are always concerned about new developments in this area which could affect the air and water quality that we have strived to protect. Recent issues near Fort McMurray with a spill over 5 million liters from a one year old double walled pipeline with no apparent working alarms demonstrate the need for increased vigilance and scrutiny in any new project. Apparently, little or no records with CNRL on the Primrose Bombing Range spills are disturbing news as the public expects better than that. There was no mention of Wetland disturbances in the sketchy Project Summary Table, however the PTOR addressed this. We are expecting the usual full documentation on this project, showing the predicted increases of air and water contaminants (especially airborne heavy metals), and all the other accumulative effects that incrementally add to the existing air and water sheds, plus details on the water amendment. Perhaps, IOL should be resurrecting the air monitoring site they recently abandoned at the Marie Creek outlet.

Sincerely,  
Hal and Marlene Martin