

Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO)

Review of the Environmental Impact Statement of the BHP Canada Exploration Drilling Project (2019-2028)

Prepared by:

AECOM 1701 Hollis Street SH400 (PO Box 576 CRO) Halifax, NS, Canada B3J 3M8 www.aecom.com

902 428 2021 tel 902 428 2031 fax

April, 2020 Project Number: 60628250



AECOM 1701 Hollis Street SH400 (PO Box 576 CRO) Halifax, NS, Canada B3J 3M8 www.aecom.com

902 428 2021 tel 902 428 2031 fax

April 27, 2020

Mr. Derek Peters Consultation Researcher Kwilmu'kw Maw-klusuaqn Negotiation Office 75 Treaty Trail, Millbrook, Nova Scotia B6L 1W3

Via Email: <email address removed>

Dear Mr. Peters:

Project No: 60628250

Regarding: Review of the Environmental Impact Statement of the BHP Canada Exploration

Drilling Project (2019-2028)

AECOM Canada Ltd (AECOM) is pleased to provide Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO) with this final report on AECOM Canada Ltd.'s (AECOM) review of the Environmental Impact Statement for the BHP Canada Exploration Drilling Project (2019-2028), completed by BHP Petroleum (New Ventures) Corporation.

Thank you for the opportunity to assist KMKNO with this work.

Sincerely,

AECOM Canada Ltd.

<original signed by>

Nora Doran, P.Geo. Senior Project Manager, Canada East <email address removed>

Nd:vm Encl. cc:

Statement of Qualifications and Limitations

The attached Report (the "Report") has been prepared by AECOM Canada Ltd. ("AECOM") for the benefit of the Kwilmu'kw Mawklusuaqn Negotiation Office (KMKNO) ("Client") in accordance with the agreement between AECOM and Client, including the scope of work detailed therein (the "Agreement"). The information, data, recommendations and conclusions contained in the Report (collectively, the "Information"):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the "Limitations");
- represents AECOM's professional judgement in light of the Limitations and industry standards for the preparation of similar reports;
- may be based on information provided to AECOM which has not been independently verified;
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
- must be read as a whole and sections thereof should not be read out of such context:
- was prepared for the specific purposes described in the Report and the Agreement; and
- in the case of subsurface, environmental or geotechnical conditions, may be based on limited testing and on the assumption that such conditions are uniform and not variable either geographically or over time.

AECOM shall be entitled to rely upon the accuracy and completeness of information that was provided to it and has no obligation to update such information. AECOM accepts no responsibility for any events or circumstances that may have occurred since the date on which the Report was prepared and, in the case of subsurface, environmental or geotechnical conditions, is not responsible for any variability in such conditions, geographically or over time.

AECOM agrees that the Report represents its professional judgement as described above and that the Information has been prepared for the specific purpose and use described in the Report and the Agreement, but AECOM makes no other representations, or any guarantees or warranties whatsoever, whether express or implied, with respect to the Report, the Information or any part thereof.

Without in any way limiting the generality of the foregoing, any estimates or opinions regarding probable construction costs or construction schedule provided by AECOM represent AECOM's professional judgement in light of its experience and the knowledge and information available to it at the time of preparation. Since AECOM has no control over market or economic conditions, prices for construction labour, equipment or materials or bidding procedures, AECOM, its directors, officers and employees are not able to, nor do they, make any representations, warranties or guarantees whatsoever, whether express or implied, with respect to such estimates or opinions, or their variance from actual construction costs or schedules, and accept no responsibility for any loss or damage arising therefrom or in any way related thereto. Persons relying on such estimates or opinions do so at their own risk.

Except (1) as agreed to in writing by AECOM and Client; (2) as required by-law; or (3) to the extent used by governmental reviewing agencies for the purpose of obtaining permits or approvals, the Report and the Information may be used and relied upon only by Client.

AECOM accepts no responsibility, and denies any liability whatsoever, to parties other than Client who may obtain access to the Report or the Information for any injury, loss or damage suffered by such parties arising from their use of, reliance upon, or decisions or actions based on the Report or any of the Information ("improper use of the Report"), except to the extent those parties have obtained the prior written consent of AECOM to use and rely upon the Report and the Information. Any injury, loss or damages arising from improper use of the Report shall be borne by the party making such use.

This Statement of Qualifications and Limitations is attached to and forms part of the Report and any use of the Report is subject to the terms hereof.

AECOM: 2015-04-13 © 2009-2015 AECOM Canada Ltd. All Rights Reserved.

Authors

Report Prepared By: <original signed by>

Tar'a Oak, B.Sc / Environmental and Regulatory Planning PAITA Environmental Consulting Inc.

<original signed by>

Karina Andrus, M.Sc.
Technical Lead, Environmental Assessment
AECOM

<original signed by>

Jonathan Ward, M.Sc. RPBio. Senior Environmental Scientist AECOM

<original signed by>

Report Reviewed By:

Anna Hall, Ph.D. Marine Mammal Biologist AECOM

<original signed by>

Pamela Neubert, M.S., Ph.D.
Associate Vice President, Director Marine Science
AE <a href="https://www.commons.org/rector-new-rector-

Robin Reese, M.E.Des., PBiol., RPBio. Technical Lead, Environmental Permitting AECOM

Table of Contents

1.	Intro		
	1.1 1.2 1.3	AECOM's Mandate Project Overview Environmental Assessment Process	1
2.	Rev	view Method	5
3.	. Results		6
4.	Con	nclusions and Recommendations	18
5.	Rev	view Limitations	19
6.	References		

Appendices

Appendix A. Table A-1 List of Acronyms and Abbreviations

1. Introduction

1.1 AECOM's Mandate

Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO), on behalf of the Assembly of Nova Scotia Mi'kmaq Chiefs (ANSMC), retained AECOM Canada Ltd. (AECOM) as an Independent Consultant to review the federal environmental impact statement (EIS) and environmental assessment (EA) of exploration/delineation/appraisal drilling programs and associated activities, proposed to be conducted in the eastern portion of the Canada-Newfoundland and Labrador Offshore Area.

AECOM's mandate consists of supporting the ANSMC in the review of the EIS and the EA reports to evaluate the scientific and technical information for completeness, to identify information gaps, and environmental risks to the Mi'kmaq of Nova Scotia, and to propose actions to address outstanding information gaps.

This report considers the EIS and EIS Summary for the BHP Canada Exploration Drilling Project (the Project) proposed by BHP Petroleum New Ventures Corporation (New Ventures; the Proponent), submitted to the Impact Assessment Agency of Canada (the Agency; formerly the Canadian Environmental Assessment Agency) to fulfil the requirements of the EIS Guidelines under the *Canadian Environmental Assessment Act*, 2012 (CEAA 2012). A subsequent report will address the Agency's EA Report when this has been issued for public comment.

1.2 Project Overview

To determine the potential presence of hydrocarbons, the proponent plans to conduct a program of petroleum exploration drilling and associated activities within a Project area that includes exploration licences (ELs) in the Orphan Basin region, located approximately 350 kilometres (km) northeast of St. John's, Newfoundland and Labrador, in the Northwest Atlantic Ocean. The Project includes drilling up to 20 exploration wells on ELs 1157 and 1158. The ELs are located in the Orphan Basin Region, in water depths ranging from 1,175 m to 2,575 m. The ELs are located both within and beyond Canada's 200 nautical miles (nm) Exclusive Economic Zone (EEZ). ELs 1157 and 1158 cover an area of 269,799 ha and 273,579 ha respectively and are located approximately 350 km east of Newfoundland. Specific drill site locations have not been identified and will be selected as Project planning and design activities move forward. The final location of the drill site will consider water depth, reservoir potential and geological properties.

Wells will be drilled using a mobile offshore drilling unit (MODU) in the form of a semi-submersible drilling unit or drillship. Logistics support will be provided through a fleet of platform supply vessels (PSVs) and helicopters. Existing shore-based facilities in Eastern Newfoundland will be used for supply, support, and logistical functions. Onshore activities at existing shore-based facilities (e.g., supply base) are not included in the scope of the EA.

Activities associated with this drilling program may include:

- MODU mobilization and drilling
 - Mobilization, operation and demobilization of the MODU
 - Establishment of a safety zone
 - o Light and sound emissions associated with MODU presence and operation
 - Waste and water management, including the discharge of drill muds and cuttings, and other discharges and emissions
 - o Geophysical surveys and/or geotechnical surveys
 - If a well is successful (i.e., hydrocarbons are discovered), vessels may be required to complete geophysical surveys (high-resolution geophysical data acquisition) and geotechnical sampling (geotechnical coring)
- Vertical seismic profiling (VSP) operations
- Well evaluation and testing
- Well decommissioning and abandonment or suspension
- Supply and servicing
 - Loading, refuelling and operation of PSVs (for re-supply and transfer of materials, fuel and equipment; on-site safety during drilling activities; and transit between the supply base and the MODU)
 - PSVs will also be used for ice management that may be required during the annual ice season (including icebergs) in offshore eastern Newfoundland (typically between March to June). Ice management processes will include established procedures for iceberg towing and deflection, and if required, procedures for the safe disconnect and movement of the drilling unit while leaving the well in a safe condition
 - Helicopter support (for crew transport and delivery of supplies and equipment)

The proponent proposes to commence exploration drilling with an initial well in 2021, pending applicable regulatory approvals to proceed. Up to 20 exploration wells could be drilled between 2021 and 2028 contingent on the drilling results of the initial well(s). Drilling activities will not be continuous and will be determined, in part, by the MODUs availability and previous wells' results. It is anticipated that each well will take between 35 to 115 days to drill.

The EIS assumes year-round drilling, although the proponent anticipates drilling will be during summer. VSP operations will take approximately one or two days per well and well testing, where required, and would occur over a one to three-month period. Well abandonment will be conducted following drilling and/or well testing.

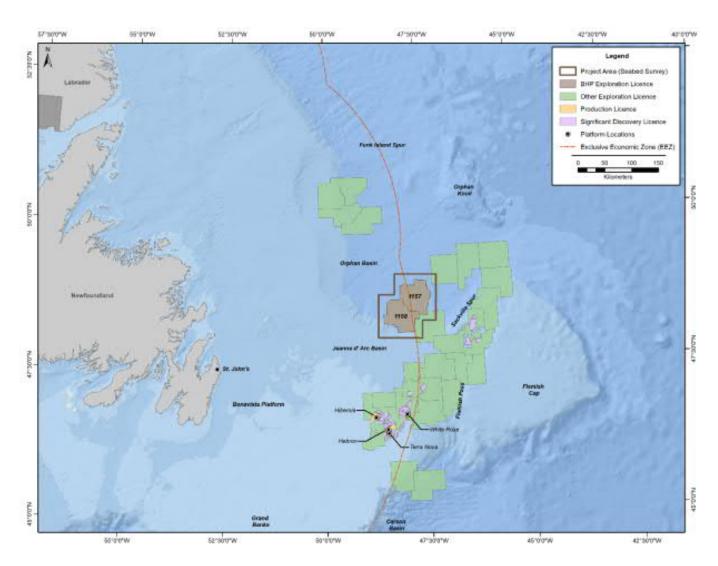


Figure 1. Project Location (Stantec 2020)

1.3 Environmental Assessment Process

The Project requires review and approval pursuant to the *Canadian Environmental Assessment Act* (CEAA 2012), as the Agency determined that it constitutes a "designated project" under the associated Regulations Designating Physical Activities, as it includes:

"the drilling, testing and abandonment of offshore exploratory wells in the first drilling program in an area set out in one or more exploration licences issued in accordance with the Canada-Newfoundland and Labrador Atlantic Accord Implementation Act"

The Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) also requires that Project-specific EAs be conducted pursuant to the *Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act* and the *Canada-Newfoundland Atlantic Accord Implementation Act* ("the Accord Acts").

The EA review of the Project under CEAA 2012 commenced in June 2019 when the proponent submitted a Project Description and associated Summary Documents to the Agency. These documents were made available for government and public review, following which the Agency determined that a federal EA was required for the Project (June 28, 2019). Notices of EA Determination and EA Commencement, as well as EIS Guidelines, were posted on June 28, 2019.

The proponent submitted the EIS and EIS Summary to the Agency on February 14, 2020. Following a conformity review, the Agency issued a letter to the proponent on March 5, 2020, indicating that the documents conform to the EIS Guidelines. The EIS and EIS Summary were posted for public comment from March 5, 2020, to April 4, 2020. The Agency will consider input from Indigenous consultation and engagement, public and stakeholder comments, regulatory review, the proponent's EIS, and other information received during the EA process, and will prepare an EA Report to inform a Project decision statement to be made by the federal Minister of Environment.

2. Review Method

AECOM's team of senior environmental and social specialists reviewed the proponent's EIS documents. The team is well versed in best practices for offshore oil and gas projects, has extensive expertise in environmental and social impact assessment, and have work-related experience in offshore oil and gas projects in Atlantic Canada.

AECOM's review focused on identifying information gaps, highlighting potential concerns and deficiencies while providing inquiries and recommendations regarding supplementary information, proposed mitigation measures, and environmental monitoring. Areas considered as having the most potential to affect Mi'kmaq rights and interests, notably environmental effects to traditional activities and the quality of life of the Mi'kmaq people, were of the highest priority for the review.

Environmental impacts would result from a large subsea oil release; therefore, spill prevention and response plans were reviewed in detail, including project design, blowout probabilities, spill dispersion modelling scenarios and results, well control planning, and mitigation and contingency measures.

3. Results

Table 1 provides a review of the EIS Summary and EIS documents as provided by the Agency to KMKNO on March 5, 2020 for review and comment. The review team concentrated on key topics of importance to KMKNO and ANSMC including effects on fish and fish habitat; effects on fishing for communal commercial and food, social and ceremonial purposes; and effects of accidents and malfunction (including the use of dispersants in oil spill response), and proposed response measures and contingency plans. The sections reviewed included:

- EIS Summary
- EIS Section 2 Project Description
- EIS Section 3 Consultation and Engagement
- EIS Section 7 Existing Human Environment
- EIS Section 8 Assessment of Potential Effects on Marine Fish and Fish Habitat
- EIS Section 9 Assessment of Potential Effects on Marine and Migratory Birds
- EIS Section 10 Assessment of Potential Effects on Marine Mammals and Sea Turtles
- EIS Section 11 Assessment of Potential Effects on Special Areas
- EIS Section 12 Assessment of Potential Effects on Commercial Fisheries and Another Ocean Uses
- EIS Section 13 Assessment of Potential Effects on Indigenous Peoples and Communities
- EIS Section 14 Cumulative Environmental Effects
- EIS Section 15 Accidental Events
- EIS Section 16 Effects of Environment on the Project

Table 1 – Review of BHP Canada Exploration Drilling Project (2019-2028) Environmental Impact Statement

Comment	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
Number	(Section and page)	TI D	0.4.1.4.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.
1	EIS Summary 2.4 Project Schedule, page 15	The Proponent proposes to drill up to 10 wells in each lease area but does not specify whether batch drilling may be considered, whereby the riserless sections are drilled for multiple well sites consecutively, with the MODU returning to drill each well to completion. Several wells would be initiated, with only the top-hole portions (conductor hole section and surface hole section), drilled initially, without risers and using water-based mud (WBM).	State whether batch drilling may be contemplated for the drilling program. If so, describe any additional environmental/safety considerations and confirm whether any effects predictions should be reassessed.
2	EIS Summary Table 3.1, page 17	In the Alternatives Analysis table, for "Flaring as required" the Preferred Option column states: "Conducted when Interval Pressure Transient Testing (IPTT) is not appropriate for data collection." This suggests that IPTT is the default formation testing method, i.e., preferred above flaring as required. Where previous EIS documents for other	Confirm that IPTT will be utilized as the preferred option whenever this method can fulfill C-NLOPB data requirements.
		exploration drilling programs offshore NL have mentioned IPTT (or formation testing while tripping), they have indicated that this option would be considered on a case by case basis, and have not implied that this would be utilized as the default option (i.e., unless C-NLOPB data requirements could not be met).	
3	EIS Summary Table 3.1, page 21	The section in the Alternatives Analysis table that refers to potential options for formation flow testing is titled "Flaring", which could be confusing given that some options do not involve flaring.	Confirm that IPTT does not involve flaring. Consider renaming this section of the table "Formation Flow Testing" rather than "Flaring", to reduce confusion regarding the no flaring options.
4	EIS Section 3.2 Indigenous Groups, Pages 4 and 7	KMKNO and ANSMC expects that consultation is undertaken directly with them on all phases of the Project planning process, including being provided the opportunity to review documents prior to submission to regulators, during both the EA process and post-EA regulatory approval processes.	The Proponent should provide communication log that meets the best practices for consultation and summarizes when and who was engaged, what concerns were raised, how the Proponent addressed concerns and any follow up required should be provided.

2020 04 27 KMKNO_BHP_EIS_Review_Final Review_Client Deliverable.Docx

Comment	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
Number	(Section and page)	The Proponent outlines its approach and policy for engaging and consultation with Indigenous peoples which states that it is committed to, "seeking to agree on and document engagement and consultation plans with potentially impacted Indigenous peoples" and "working to obtain the consent of Indigenous Peoples to BHP activities". While the Proponent states that they have this policy, engagement on this Project does not appear to follow this commitment as it has been limited to email invites and multi-proponent workshops. Further, a record of communication with individual Indigenous communities has not been provided, nor is the information on who attended the various multi-proponent workshops. The Proponent has also "committed to seek regular engagement as long as we have a presence in the region, ensuring that right-holders and stakeholders are consistently informed on matters of importance to them and maintain transparency regarding our business planning."	It is the expectation of KMKNO and ANSMC that the Proponent works directly with them to develop a mutually agreed upon process for engagement and consultation, including a proposed meeting schedule and details on how information from consultation will be disseminated, reviewed and verified.
5	EIS Section 3.2.7 Topics of Interest and Concerns Raised by Indigenous Groups (Table 3.8), Page 15 EIS Table 14.1 Other Projects and Activities Considered in the Cumulative Effects Assessment, Page 5-8 EIS Table 14.2 Ongoing and Proposed Offshore Petroleum Exploration Activities in the RAA EIS Figure 14-1 Ongoing and Proposed Oil and Gas	KMKNO and ANSMC have concerns related to the cumulative effects of the offshore projects on their rights, commercial communal fishing licences and the ability for the Mi'kmaq to exercise of their traditional rights and practices. The Proponent has summarized that Indigenous Groups have expressed concerns about a perceived lack of a comprehensive approach to analyzing, understanding and addressing the potential for cumulative impacts of the proposed projects in the Region. The Proponent has indicated that cumulative effects will be addressed through the Regional Assessment currently being undertaken. While a regional assessment may determine environmental or social impact thresholds, these	The Proponent's participation in the Regional Planning process does not adequately address the concerns raised by Indigenous Groups on the potential cumulative impacts to the environment and Indigenous rights. The Proponent should include the exclusion zones on Figure 14-1 to show the overlap of exclusion zones and limitations to fishing areas. Further, the Proponent should account for the temporal overlap of the current and future drilling and seismic operations as well as the current production projects in the assessment of cumulative effects of this Project.

Comment Number	Reference to EIS (Section and page)	Context and Rationale	Specific Question/ Request for Information
	Exploration Drilling and Production Projects Offshore Newfoundland and Labrador, Page 9	will not likely be retroactively applied to projects which have received approvals and are operating. KMKNO and ANSMC require further information on how the Proponent will address potential cumulative effects to the environment and Indigenous rights raised by Indigenous Groups.	
		Proponent has noted in Table 14.1 that safety (exclusion) zones for required may result in "spatial use conflicts with fisheries and other ocean uses".	
		Table 14.2 identifies the temporal boundaries of ongoing and proposed offshore survey, exploration projects but not of the production projects.	
		Figure 14-1 identifies the existing licence holders but does not include exclusion zones around these project areas.	
6	EIS Section 3.2.7 Topics of Interest and Concerns Raised by Indigenous Groups (Table 3.8), Pages 14-17	The Proponent indicates that they have "endeavoured to gather Indigenous Knowledge, where appropriate and available, and recognizes the importance of considering Indigenous Knowledge in its operations" The gathering of Indigenous Knowledge must be done directly with KMKNO and ANSMC.	KMKNO and ANSMC requests consultation to obtain or verify any community-specific information or Indigenous Knowledge. As noted above, it is the expectation of KMKNO and ANSMC that the Proponent work directly with them to develop a mutually agreed upon process for engagement and consultation, this includes the gathering and verification of community Indigenous Knowledge or community specific publicly available information. The process should also ensure that Indigenous Knowledge is protected through a protocol agreed to by the knowledge holders.
7	EIS Section 3.2.7 Topics of Interest and Concerns Raised by Indigenous Groups (Table 3.8), Pages 14-17	The Proponent has committed to developing a communication protocol with Indigenous Groups to provide regular updates during operations and to inform Indigenous Groups in the event of an Emergency.	KMKNO and ANSMC welcomes the Proponent to work directly with them to develop a mutually agreed upon process for communication and that this form the basis for an Indigenous Communication Plan (ICP). This plan should be in place prior to initiating Project activities.
8	EIS Section 3.2.7 Topics of Interest and Concerns Raised by Indigenous Groups (Table 3.8), Pages 14-17	A major accident or malfunction incident is of great concern for the Mi'kmaq and there is an expectation that communities will be well informed and prepared should such an event occur.	The Proponent should provide details in how they plan to involve the Mi'kmaq in the development and implementation of emergency response and contingency plans.

Comment Number	Reference to EIS (Section and page)	Context and Rationale	Specific Question/ Request for Information
		The Proponent has committed to share environmental monitoring results and explore partnerships with Indigenous Groups and others to collaboratively further the environmental knowledge base in the region. Further, the Proponent has committed to advocating for Indigenous communities' participation in future oil spill response planning and response exercises.	The Proponent should ensure that information about the potential for spills / large-scale accidental events will be shared with Indigenous groups, including consultation in relation to the findings of dispersion modelling and the scope of emergency preparedness and response planning. The Proponent should develop an Indigenous Participation Plan (IPP) to identify opportunities for the inclusion of the Mi'kmaq in training, employment and business opportunities with the Project.
9	EIS Section 3.2.7 Topics of Interest and Concerns Raised by Indigenous Groups (Table 3.8), Pages 16 EIS Section 7.4.8.2 Food, Social, Ceremonial Fisheries, Pages 151-152 EIS Section 13.3 Assessment of Residual Environmental Effects on Indigenous Peoples and Communities, Page 9-23	The EIS Guidelines requires an assessment of the mental and social well-being of Indigenous people and also the consideration of the effects to the practice of a current use or activity through changes or alterations to access into areas used for traditional purposes and commercial fishing, including implementation of exclusion zones. The Proponent has also indicated that they will use a case-by-case approach to co-design a compensation negotiation process with the affected community.	The Proponent should develop a Project-specific Compensation Program which includes the potential economic loss and the cultural and mental impacts from fishing gear loss, the loss or reduced access to commercial communal fishing areas and moderate livelihood through the establishment of an exclusion zone, and the potential loss of the fishing and impacts to the Mi'kmaq's exercise of cultural and traditional practices due to potential accidents and malfunctions. This program should be in place prior to initiating Project activities. Given that Mi'kmaq harvesting activities in the vicinity of the shoreline could be impacted by an oil spill, the Proponent should explain the rationale of not conducting specific studies on current use of lands and resources for traditional purposes.
10	EIS Section 3.2.7 Topics of Interest and Concerns Raised by Indigenous Groups (Table 3.8), Pages 17	The Proponent has indicated that they will develop an Indigenous Fisheries Consultation Plan (IFCP) in consultation with Indigenous Groups.	KMKNO and ANSMC welcomes the Proponent to work directly with them to develop a mutually agreed upon process for communication and that this form the basis for an IFCP (separate from the ICP). This plan should be in place prior to initiating Project activities.
11	EIS Section 6, Existing Biological Information	Mapping within the existing biological information section does not illustrate key Project components.	The Proponent should illustrate the proposed vessel routes on each figure within the chapter. Vessel routes relative to the Project area as well as vessel traffic should be defined, including the number of vessels that currently and will transit through the proposed Project area.
12	EIS Section 6.1.9.2 Atlantic Salmon, Page 6-68 & EIS Section 6.1.9.1 American Eel, Page 6-66	Regarding migratory routes of these two key fish species, the identification of Atlantic salmon post-smolt migration routes (Figure 6-23) by considering the general ocean currents is an assumption and subsequent data gap.	The Proponent should seek opportunities to enhance the understanding of the migratory routes of both Atlantic Salmon and American eel as both are assumed to overlap with the PSV route.

Comment Number	Reference to EIS (Section and page)	Context and Rationale	Specific Question/ Request for Information
		Furthermore, the paper referenced within the document (Béguer-Pon et al. 2015) focuses on American eel released along the coast of Nova Scotia to the south, which is an extrapolation of the species behavior to fit the Project's site.	
13	EIS Section 7.4.8.1 Commercial Communal Fisheries, Page 146	KMKNO and ANSMC are concerned about potential current and future impacts to Commercial Communal Fisheries and moderate livelihood fisheries through the loss of access, impacts to migratory species that pass through the Project area and the potential abandonment of wells that could limit the ability to fish for groundfish in the future. The Proponent's determination of low potential occurrence within the Project area of Swordfish and Tuna is not adequately supported with peer reviewed references and or information obtained directly from the Mi'kmaq.	The Proponent should provide peer-reviewed references and mapping of the data and distributions should be shown relative to the proposed Project location and pertinent to these species. The Proponent should consult KMKNO and ANSMC to develop a mutually agreed-upon process for engagement and consultation for gathering community-specific information and for identifying appropriate mitigation measures to limit or prevent potential impacts to the Mi'kmaw rights, licences and traditional and cultural practices.
14	EIS - Overarching comment on the effects assessment chapters 8 - 11	While it is acknowledged that the selection of the type of vertical seismic profiling has not been undertaken at this stage of the Project, it is not apparent from the effects assessment chapters which vertical seismic profiling methodology is being assessed and if the potential effects from a walk-away vertical seismic profiling survey has the same underwater noise effect as a zero offset vertical seismic profiling.	Describe which vertical seismic profiling method the effects assessment is predicated on, ensuring the presentation of a worst-case scenario until such time that a decision on the final approach to vertical seismic profiling is determined.
15	EIS - Overarching comment on the effects assessment chapters 8 - 11	Mitigation measures and residual impacts refer to the environmental effects predicted to remain after the application of a mitigation measure(s).	This EIS does not to address predicted environmental effects that remain after the application of a mitigation measure(s) and these need to be characterized. For example, the EIS only restates the potential effect and, instead, it should indicate the remaining portion of that effect post-mitigation application. Without an understanding of the effectiveness of mitigation, it is difficult to quantify the significance, likelihood, and severity of the remaining effect subsequent to the implementation of mitigation measures.

Comment	Reference to EIS	Context and Rationale	Specific Question/ Request for Information
Number	(Section and page)		
16	EIS – Section 8.3.1 Change in Risk of Mortality, Injury or Health	The EIS Guidelines (Section 7.3.1) require that the Proponent describe the predicted effects on fish and fish habitat, including the calculations of any potential habitat loss (temporary or permanent) in terms of surface areas (e.g. spawning grounds, juvenile, rearing and feeding areas), and in relation to availability and significance. The Proponent did not provide information about fish habitat loss in the EIS.	This is an information gap. The Proponent should calculate fish habitat surface area losses in the Project Area by type of habitat (spawning, rearing, feeding) and locate these on a map.
17	EIS Table 8.5 Summary of Residual Environmental Effects on Marine Fish and Fish Habitat, including Species at Risk, Page 41.	The table presents a magnitude of effects as Low ("Low – a detectable change but within the range of natural variability") for both VSP and Discharge. The confidence section (Section 8.5) acknowledges the shortcoming in limited data specific to the LAA and RAA.	A conservative approach should be considered, reflected by a change in the magnitude of effects determination, when there is a stated gap in the understanding of the existing conditions within the LAA. The potential for the presence of high-value habitat must be considered in light of a lack of understanding of the existing conditions i.e., a precautionary approach should be taken until such time that the seabed survey validates the assumptions of the assessment.
18	EIS Section 8.3.1.2 Mitigation - Presence and Operation of a MODU, Pages 8-11	While it is stated in Section 11.5 that "the use of a pre-drill imagery-based seabed survey will help to identify coral and sponge colonies (in special areas) that may exist within a 600 m radius of the proposed site for each well", it is not apparent from the mitigation measures what the areal extent of the visual seabed survey will be for fish habitat.	The extent of the seabed survey should be stated for the Assessment of Potential Effects on Marine Fish and Fish Habitat and illustrated on a map. The Proponent should also specify if a biologist or a trained professional should be present during the survey.
19	EIS Section 9.3.1.2 Mitigation, Page 9-11	Supply and Servicing Operations – "The regional CWS office will be contacted for separation distances and altitudes between helicopters transiting to and from the MODU and migratory bird nesting colonies, as per CWS guidelines (Government of Canada 2018) and routes will comply with provincial Seabird Ecological Reserve Regulations, 2015 (no closer than 300 m). Specific details will be provided in the EPP.	The Proponent should specify if they will suspend flights during these critical periods for these species.
20	EIS Section 10.3.1.2 Mitigation - Vertical Seismic Profiling, Pages 8-11	Marine mammal exclusion zone.	With respect to the marine mammal exclusion zone, the ability to spot a sea turtle at 500 m seems unrealistic without further information on the approach that the MMO will take. Further information should be provided on the approach to marine mammal observation within the marine mammal exclusion zone including how the area will be

Comment Number	Reference to EIS (Section and page)	Context and Rationale	Specific Question/ Request for Information
			adequately monitored, i.e., where the observers will be located, and how they are anticipated to monitor the area accounting for variability in the environmental conditions (i.e. sea state, fog, darkness etc.). The Proponent should commit to using Passive Acoustic Monitoring (PAM) in addition to visual monitoring.
			While it is noted that a Marine Mammal Monitoring Plan will be developed (Section 10.6), sufficient information needs to be provided within the Application in order to give confidence that the significance determination of residual effects (i.e., effects remaining following the application of mitigation measures) is accurately captured. This is of particular importance given the number of <i>Species at Risk Act</i> (SARA)-listed species, those currently under consideration for addition to Schedule 1, and the high number of marine mammal sightings illustrated in the LAA and RAA in figures 6-38, 6-39, and 6-40 in the EIS.
21	EIS Section 10.3.1.2 Mitigation - Shut down procedure, Page 10-15	The Proponent states: "Shut down procedures (i.e., shutdown of source array) will be implemented if a marine mammal or sea turtle listed as endangered or threatened on Schedule 1 of SARA, or a beaked whale species, is observed within 500 m of the airgun array."	This text appears to suggest that shut down procedures will not be implemented for marine mammals that are not listed as endangered or threatened on Schedule 1 of SARA nor a beaked whale species. The measure that will be implemented during vertical seismic profiling for non-listed species that are not on Schedule 1 of SARA should be detailed, for example, if non-beaked whales are observed.
22	EIS Section 10.3.1.2 Mitigation - Supply and Servicing Operations, Page 10-10	Section 10.3.1.2 of the EIS states: "PSVs will follow established shipping routes where they exist (i.e., in proximity to shore)." Transit during migration or reproduction season have the potential to disrupt these important cycles. Thus, the mitigation plan should include information on how this impact will be mitigated. The Proponent also does not take into account the Marine Mammal Regulations of the <i>Fisheries Act</i> , which has a number of prohibited actions including that vessel traffic should not separate a marine mammal from its group or a mother and her calf.	The Proponent should also add information about compliance with the Marine Mammal Regulations. The Proponent should state that they plan to minimize traffic during these important periods.

Comment Number	Reference to EIS (Section and page)	Context and Rationale	Specific Question/ Request for Information
23	EIS Section 10.3.1.3 Supply and Servicing Operations. Page 10-14.	"Mortality or injury of marine mammals and sea turtles can occur as a result of a vessel strike. Although there are no known marine mammal concentration areas along the PSV transit route, it is possible that groups of foraging marine mammals may be encountered, especially during summer months. Sea turtles are considered rare along the transit route as well as in the Project Area."	Please provide a reference or supporting evidence or references for the statement "Mortality or injury of marine mammals and sea turtles can occur as a result of a vessel strike. Although there are no known marine mammal concentration areas along the PSV transit route, it is possible that groups of foraging marine mammals may be encountered, especially during summer months. Sea turtles are considered rare along the transit route as well as in the Project Area".
		Absence of data of concentration areas does not negate the potential effect of a vessel strike, nor does it imply an absence of a species in poorly studied areas (e.g., recent discovery of northern bottlenose whale population in the Sackville Spur area).	
		In addition, for endangered species, a single strike can have a significant effect on the species recovery and survival (e.g. North Atlantic right whale). While the transit routes are outside the critical and primary habitat for this species, they are within the range of this species.	
24	EIS Section 10.3.1.3 Supply and Servicing Operations, Page 14.	"Mortality or injury of marine mammals and sea turtles can occur as a result of a vessel strike. Although there are no known marine mammal concentration areas along the PSV transit route, it is possible that groups of foraging marine mammals may be encountered, especially during summer months. Sea turtles are considered rare along the transit route as well as in the Project Area."	The Project should consider the potential for this statement to change as a result of a change to oceanographic conditions and the increased potential for marine mammals to be present during the Project activities. Additional scientific data for marine mammals and sea turtles inhabiting the offshore waters of the Project Area and transit routes will likely become available as a result of ongoing as well as future academic research and federal government initiatives; The Proponent should commit to actively continue to seek updated literature for marine mammals and turtles with regard to their changing
		ranges as a result of climate change and anthropogenic interaction has accelerated the behavioural change in many marine mammals.	distributions as a consequence of climate and oceanographic changes.
25	EIS Section 10.3.1.3 Supply and Servicing Operations, Page 16.	"The recent mortality incidents, along with the changing distribution and habitat use of this species over the last several years require a change in the monitoring and management strategies for the North Atlantic right whale (Pettis et al. 2018). Although possible, it is	A single vessel strike to a North Atlantic right whale could have a significant impact on the population. The author acknowledges the change in behaviour patterns of this species and should, therefore, take a more conservative approach to the potential for a strike to occur.

Comment Number	Reference to EIS (Section and page)	Context and Rationale	Specific Question/ Request for Information
		unlikely that a right whale will occur in the Project Area and along the PSV routes."	Given the challenges in spotting a North Atlantic right whale (or other species that have a low profile on the water) or a rare species encountered infrequently from a vessel the mitigation measures outline in 10.3.1.2 (page 10) appear inadequate. For example, key vessel personnel should be trained to identify marine mammals and sea turtles, to serve as lookouts during travel time to minimize potential impacts. Furthermore, information on the mitigation measures adopted as a result of a marine mammal or sea turtle being "reported" should be outlined in a protected species mitigation monitoring plan. We recommend the Proponent prepare a daily notice to mariners with proposed operations and vessel transits and have this available on a website or make it available to the Coast Guard. The goal of this notification system is to capture observations of marine mammals from multiple sources and inform the PSV route prior to sailing. The Project should look for opportunities to enhance the mitigation measures currently proposed to improve the safety of PSV routes to the MODU and build an awareness of the potential for a marine mammal, including the North Atlantic right whale or other marine mammals that could be present. For example, simple measures such as including available resources for the North Atlantic right whale on the vessel, providing on-line resources for recent sightings (both for reference and for contribution), preparation of daily logs that will be submitted to appropriate agency representatives, and a post-project marine mammal and turtle sighting report.
26	EIS Section 10.3.2.3 - Characterization of Residual Project-related Environmental Effects, Pages 10-21	In regards to the magnitude of the effect of the presence and operation of a MODU and VSP, Section 10.3.2 of the EIS states: "Given that the zone of influence of the Project at one time or location will likely be a small proportion of the feeding, breeding, or migration area of species, marine mammals and sea turtles will not be displaced from important habitats or during important activities or be affected in a manner that causes adverse effects to overall populations in the region".	The Proponent should cite studies to support this statement.

Comment Number	Reference to EIS (Section and page)	Context and Rationale	Specific Question/ Request for Information
		area is beyond the main habitat of North Atlantic right whales, the Endangered status of this species requires thoughtful and effective consideration, and as with all species compliance with the <i>Fisheries Act</i> and the SARA.	
27	EIS Section 13.3.1.3 Characterization of Residual Project-related Environmental Effects, Page14	The Proponent indicates that the abandonment program has not been defined but determines that, "The residual effects associated with well abandonment on commercial communal fishing, including potential indirect socio-economic effects, are predicted to adverse, negligible to low in magnitude, restricted to the Project Area, occur more than once at irregular intervals, be short to permanent in duration, and reversible."	KMKNO and ANSMC requests consultation related to moderate livelihood fisheries and commercial communal licences that overlap with the Project area. KMKNO and ANSMC should be consulted on any potential impacts or infringements on fishing rights currently or in the future. As noted, KMKNO and ANSMC expect that consultation is undertaken directly with them on all phases of the Project planning process, including decommissioning and that they be provided the opportunity to review documents prior to submission to regulators, during both the EA process and post-EA regulatory approval processes.
28	EIS Section 15.5.3 Well Intervention Response, pages 15-83 to 15-85	The Proponent estimated a timeframe of only 9 to 17 days to cap a well in the case of a subsea blowout, compared to capping timelines provided in recent EIS by Husky (13 to 24) days, Nexen (15 to 30 days), ExxonMobil (30 days) and Equinor (36 days). This substantially-reduced mobilization timeframe is possible on account of the air-freightable capping stack, as identified by KMKNO in the initial review of the ExxonMobil and Equinor EIS documents. KMKNO also acknowledges that the Proponent has provided a useful figure detailing the generic sequence of response for source control (Figure 15-36), as has been requested from other operators.	N/A

Comment Number	Reference to EIS (Section and page)	Context and Rationale	Specific Question/ Request for Information
29	EIS Section 15.5.3.3 Well Capping, page 15-83	The Proponent states the following: "In the event of an incident, BHP's current primary plan is to use the OSRL capping stack stored in Stavanger, Norway, and will maintain a list of suitable deployment vessels in both the Atlantic Canada region (e.g., the Skandi Constructor, the Maersk Nexus or several of the Atlantic towing fleet) and in the northwest European region (e.g., from the North Sea or Norway)."	The Proponent should confirm that the list of suitable deployment vessels will be maintained prior to and throughout the drilling program (i.e., not only in the event of an incident) and specify at what regularity the list will be updated (e.g., daily, weekly, monthly).
30	EIS Section 15.6 Environmental Effects Assessment, Accidental Events	It is encouraging to see the description of potential effects of dispersant use on VCs, which is more thorough than such assessment typically included in EIS for offshore exploration drilling projects.	N/A
31	EIS Section 16.2.2 Climatology, Weather and Oceanographic Conditions	The Proponent summarizes mitigation measures and compliance with regulatory requirements to manage effects of the environment on the Project to acceptable levels. The Proponent commits to complying with Canadian regulations and international standards to mitigate risks associated with extreme weather and oceanographic conditions. The MODU and equipment will be designed to withstand potential environmental loads, and Captains / Pilots will have the authority and obligation to suspend or modify operations in case of adverse weather or poor visibility that compromises the safety of PSV, helicopter, or MODU operations. However, all personnel may not have previously conducted drilling in harsh weather environments similar to those in the North Atlantic. Specialized training and explicit procedures for these conditions may be needed to ensure proper decision making and quick and safe disconnect in advance of forecasted weather conditions that may be outside of the MODU operating limits.	The Proponent should commit to engaging experts to deliver training (prior to initiating drilling) that is geared to operating in harsh weather environments, including specialized training for technical experts, clear decision-making factors and processes, and unambiguous roles and responsibilities. The Proponent should also commit to developing, implementing and exercising detailed procedures for these conditions. A conservative approach should be employed when establishing MODU, PSV and helicopter operating limits, with consideration also given to ROV launch thresholds to ensure adequate monitoring in the event of an incident. In the EIS, the Proponent should describe the process for identifying and assuring adherence to these thresholds.

4. Conclusions and Recommendations

The review findings summarized in **Table 1** provide comments and questions that KMKNO and ANSMC would like addressed to better understand the potential impacts the Project may have on Mi'kmaw rights and interests, including environmental effects to traditional activities and the quality of life of the Mi'kmaq people. KMKNO and ANSMC welcome the opportunity to work directly with the Proponent on the development of a mutually agreed upon consultation and engagement process to prevent potential impacts to the Mi'kmaw rights, fisheries, and traditional and cultural practices for the full lifecycle of this Project.

5. Review Limitations

AECOM relied upon publicly available information as referenced in the report. This report is intended solely for the Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO) and the Assembly of Nova Scotia Mi'kmaq Chiefs (ANSMC). The information herein reflects our best judgment in consideration of information available at the time of preparation. No portion of this report should be used as separate entity, as it is written to be read in its entirety.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. Please refer to the Statement of Qualifications at the beginning of the Report.

6. References

- American Petroleum Institute (API). Guidelines for Offshore Oil Spill Response Plans API Technical Report 1145, September 2015. Retrieved 2018-01-24 from: http://www.oilspillprevention.org/~/media/oil-spill-prevention/spillprevention/r-and-d/spill-response-planning/1145-e1-final.pdf.
- Assembly of Nova Scotia Mi'kmaq Chiefs. N.d. Mi'kmaq Ecological Knowledge Study Protocol. 2nd Edition. 27 pp.
- Canadian Association of Petroleum Producers (CAPP). 2018. Emergency Planning and Response. Retrieved 2018-01-24 from: http://atlanticcanadaoffshore.ca/emergency-planning-and-response/.
- Canadian Environmental Assessment Agency. 2015. Technical Guidance for Assessing the Current Use of Lands and Resources for Traditional Purposes under the *Canadian Environment Assessment Act*, 2012. 21 pp.
- Cordes, E.E., Jones, D.O.B., Schlacher, T.A., Amon, D.J., Bernardino, A.F., Brooke, S., Carney, R., DeLeo, D.M., Dunlop, K.M., Escobar-Briones, E.G., Gates, A.R., Génio, L., Gobin, J., Henry, L-A., Herrera, S., Hoyt, S., Joye, M., Kark, S., Mestre, N.C., Metaxas, A., Pfeifer, S., Sink, K., Sweetman, A.K., and Witte, U. 2016. Environmental Impacts of the Deep-Water Oil and Gas Industry: A Review to Guide Management Strategies. Frontiers in Environmental Science, 4: 58. ISSN: 2296-665X, doi: 10.3389/fenvs.2016.00058
- DFO (Fisheries and Oceans Canada). 2011. The Marine Environment and Fisheries of Georges Bank, Nova Scotia: Consideration of the Potential Interactions Associated with Offshore Petroleum Activities. Can. Tech. Rep. Fish. Aquat. Sci. 2945:xxxv + 492pp.
- DFO. 2018. Review of the Environmental Impact Statements for The Flemish Pass Exploration Drilling Project and the Eastern Newfoundland Offshore Exploration Drilling Project. DFO Can. Sci. Advis. Sec. Sci. Resp. 2018/026. Available online at: http://www.dfo-mpo.gc.ca/csas-sccs/Publications/ScR-RS/2018/2018 026-eng.pdf
- Edmonds, N.J., Firmin, C.J., Goldsmith, D., Faulkner, R.C., Daniel, and Wood, T. 2016. A review of crustacean sensitivity to high amplitude underwater noise: Data needs for effective risk assessment in relation to UK commercial species. Marine Pollution Bulletin, 108(1–2): 5-11. ISSN 0025-326X, doi.org/10.1016/j.marpolbul.2016.05.006
- Fisher, C.R., Demopoulos, A.W.J., Cordes, E.E., Baums, I.B., White, H.K., and Bourque, J.R. 2014. Coral communities as indicators of ecosystem-level impacts of the Deepwater Horizon spill. Bioscience, 64: 796–807. doi.org/10.1093/biosci/biu129
- Fisheries and Oceans Canada (DFO). 2007. Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment. Retrieved 2018-01-25 from: http://www.dfo-mpo.gc.ca/oceans/publications/seismic-sismique/index-eng.html.
- Griffiths, J. R., Kadin, M., Nascimento, F.J., Tamelander, T., Törnroos, A., Bonaglia, S., Bonsdorff, E., Brüchert, V., Gårdmark, A., and M. Järnström. 2017. The importance of benthic–pelagic coupling for marine ecosystem functioning in a changing world. Global Change Biology 23:2179-2196. doi: 10.1111/gcb.13642

- Halliburton. 2018. Well Control and Prevention Services Global Rapid Intervention Package. Retrieved 2018-01-25 from: http://www.halliburton.com/public/project_management/contents/Data_Sheets/web/global-rapid-intervention-package.pdf.
- Hawkins, A.D., Pembroke, A.E., and Popper, A.N. 2014. Information gaps in understanding the effects of noise on fishes and invertebrates. Rev. Fish Biol. Fish. 25, 39e64. doi: 10.1007/s11160-014-9369-3
- NSOAA 2009: Nova Scotia Office of Aboriginal Affairs, Proponents' Guide: The Role of Proponents in Crown Consultation with the Mi'kmaq of Nova Scotia. 2012. Retrieved from:

 http://novascotia.ca/abor/office/what-we-do/consultation/. Last modified: 2015-06-01. 12 pp.
- Popper, A.N., and Hawkins, A.D. 2018. The importance of particle motion to fishes and invertebrates. The Journal of the Acoustical Society of America. 143: 470. doi: 10.1121/1.5021594
- Roberts, L., Cheesman, S., Elliott, M., and Breithaupt, T. 2016. Sensitivity of Pagurus bernhardus (L.) to substrate- borne vibration and anthropogenic noise. Journal of Experimental Marine Biology and Ecology, 474: 185-194. ISSN 0022-0981, doi.org/10.1016/j.jembe.2015.09.014
- Stantec. 2014. Shelburne Basin Venture Exploration Drilling Project, Volume I Environmental Impact Statement, Shell Canada Ltd. https://www.ceaa-acee.gc.ca/050/documents/p80058/99338E.pdf
- Stantec. 2020. BHP Canada Exploration Drilling Project, Environmental Impact Statement, BHP Petroleum (New Ventures) Corporation.
- Unama'ki Institute of Natural Resources (UINR). 2020. Review of the Equinor Canada Ltd. Central Ridge Exploration Drilling Program Abridged EIS. Prepared for Kwilmu'kw Mawklusuaqn Negotiation Office (KMKNO).

Appendix A

Table A-1
List of Acronyms and Abbreviations Table

•

Table A-1: List of Acronyms and Abbreviations

Acronym Definition

Accord Acts Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and

Labrador Act and the Canada-Newfoundland Atlantic Accord Implementation Act

AECOM Canada Ltd.

ANSMC Assembly of Nova Scotia Mi'kmaq Chiefs
Agency Impact Assessment Agency of Canada

C-NLOPB The Canada-Newfoundland and Labrador Offshore Petroleum

CEAA 2012 Canadian Environmental Assessment Act, 2012

CWS Canadian Wildlife Service
DFO Fisheries and Oceans Canada
EA Environmental Assessment

EBSA Ecologically and Biologically Significant Areas

EEZ Exclusive Economic Zone

ECCC Environment and Climate Change Canada

EIS Environmental Impact Statement

EL Exploration Licence

EPP Environmental Protection Plan
FSC Food, social and ceremonial
ICP Indigenous Communication Plan

IFCP Indigenous Fisheries Communication Plan

IPP Indigenous Participation Plan
IPTT Interval Pressure Transient Testing

LAA Local Assessment Area

Km Kilometre

KMKNO Kwilmu'kw Maw-klusuaqn Negotiation Office

MARPOL International Convention for the Prevention of Pollution from Ships

m Metre

MEKSP Mi'kmaq Ecological Knowledge Study Protocol

MMO Marine Mammal Observer

MODU Mobile Offshore Drilling Unit

NAFO Northwest Atlantic Fisheries Organization

NL Newfoundland and Labrador

nm Nautical Mile

PAM Passive Acoustic Monitoring
PSVs Platform Supply Vessels
RAA Regional Assessment Area
ROV Remotely Operated Vehicle

SARA Species At Risk Act
WBM Water-based mud

AECOM is built to deliver a better world. We design, build, finance and operate infrastructure assets for governments, businesses and organizations in more than 150 countries. As a fully integrated firm, we connect knowledge and experience across our global network of experts to help clients solve their most complex challenges. From high-performance buildings and infrastructure, to resilient communities and environments, to stable and secure nations, our work is transformative, differentiated and vital. A Fortune 500 firm, AECOM had revenue of approximately \$17.4 billion during fiscal year 2016.

See how we deliver what others can only imagine at aecom.com and @AECOM.

Contact

Nora Doran
Senior Project Manager
T spersonal information remov

<email address removed>