Environmental Assessment Approval

Approval Date: April 12, 2023

Bear Head Energy Green Hydrogen and Ammonia Production, Storage and Loading Facility

Bear Head Energy Inc.

Richmond County, Nova Scotia

Terms and Conditions for Environmental Assessment Approval

1 Definitions

1.1 *Act* means Environment Act 1994-95, c.1, s.1, and includes, unless the context otherwise requires, the regulations made pursuant to the Act, as amended from time to time.

1.2 Department means the Department of Environment and Climate Change, and the contact for the Department for this Approval is:

Nova Scotia Environment and Climate Change
Eastern Region, Port Hawkesbury Office
218 MacSween Street, Suite 12,
Port Hawkesbury, NS
B9A 2J8
Phone: 902-625-0791 Fax: 902-625-3722

1.3 Minister means the Minister of Environment and Climate Change.

1.4 Commencement means the same as to commence work, as defined in the Environmental Assessment Regulations.

1.5 EA means Environmental Assessment.

2 Scope

2.1 This Approval (the "Approval") relates to the Approval Holder(s) and their Registration Document, and all documentation submitted to the Department prior to the issuance of this approval for the Bear Head Energy Green Hydrogen and Ammonia Production, Storage and Loading Facility, situated at or near Point Tupper, Richmond County, Nova Scotia, hereafter referred to as the "Project."

2.2 The Approval Holder(s) shall ensure the Project is carried out in accordance with this Approval and reference documents, including the Registration Documents and supporting documentation.

3 General

3.1 The Approval Holder shall conduct the Project in accordance with the Environment Act, as amended from time to time.

3.2 The Approval Holder shall, within two years of the date of issuance of this Approval, commence work on the Project unless granted a written extension by the Minister.

3.3 The Approval Holder shall provide written notification to the Department of the commencement date of the Project, a minimum 30 days prior to the commencement.

3.4 The Approval Holder shall provide to the Department a concordance table, detailing the status of the EA terms and conditions, on or before January 31 of each year until released in writing by the Department.

3.5 Prior to any proposed expansion, modification, or relocation of any aspect of the Project from that proposed in the Registration Document, the Approval Holder must submit the proposal to the EA Branch for review and may require additional information from the Approval Holder or an EA.

3.6 Nothing in this Approval relieves the Approval Holder of the responsibility for obtaining and paying for all other licenses, permits, approvals or authorizations necessary for carrying out the Project which may be required by municipal by-laws or provincial or federal legislation. The Minister does not warrant that such licenses, permits, approvals or authorizations will be issued.

3.7 No authority is granted by this Approval to enable the Approval Holder(s) to commence or continue the Project on lands which are not in the control or ownership of the Approval Holder(s). It is the responsibility of the Approval Holder(s) to ensure that such a contravention does not occur. Failure to retain said authorization may result in this Approval being cancelled or suspended.

3.8 The Approval Holder shall not transfer, sell, lease, assign or otherwise dispose of this Approval without the written consent of the Minister. The sale of a controlling interest of a business or a transfer of this Approval from a parent company to a subsidiary or an affiliate is deemed to be a transfer requiring consent.

3.9 Upon any changes to the Registry of Joint Stock Companies information related to the Approval Holder, the Approval Holder shall provide a copy to the Department within 5 days of the changes.

3.10 If there is a discrepancy between the Registration Documentation and the terms and conditions of this Approval, the terms and conditions of this Approval shall apply.

3.11 Where a timeline is associated with a condition(s) of the Approval, the Approval Holder shall fulfil the requirements of the condition(s) within the prescribed timeline, unless otherwise authorized in writing by the Department.

3.12 Where the provision of a plan is associated with a condition(s) of the Approval, the Approval Holder may submit the plan in phases, with the written consent of the Department, and shall fulfil the requirements of the condition(s). Where consent is provided in accordance with this section, work associated with and subject to a particular phase of a plan may only continue to the extent where the relevant phase(s) of the plan are complete.

3.13 The Approval Holder shall notify the Department of any incidents of non-compliance with this Approval immediately and in accordance with the Act and Regulations.

3.14 The Approval Holder shall bear all expenses incurred in carrying out the environmental management and monitoring required under the terms and conditions of this Approval, the Act or the Regulations.

3.15 Unless specified otherwise in this Approval, all samples required to be collected by this Approval, the Act or the Regulations shall be collected, preserved, and analysed, by qualified personnel, in accordance with recognized industry standards and procedures and in accordance with any Standard under the Act or Regulations.

3.16 The Approval Holder shall ensure that this Approval, or a copy, is present at the Project site while personnel are on site and that personnel directly involved in the Project are made fully aware of the terms and conditions which pertain to this Approval.

3.17 The Approval Holder shall update and/or revise any of the plans, programs or other documents required in this Approval to reflect the progressive development of the Project, and at any time deemed necessary by the Department. The Approval Holder shall make the documents available upon request by the Department.

3.18 Throughout the life of the Project, the Approval Holder shall conduct any additional studies or monitoring and/or implement additional mitigation measures, as required by the Department.

3.19 The Approval Holder shall provide to the Department a summary table detailing the results of the monitoring required in this Approval, or otherwise completed for the Project, on or before January 31 of each year until released in writing by the Department. The results shall clearly identify and summarize any exceedances.

4 Project Design, Facility Development and Operations

4.1 As part of the application for the Industrial Approval under the *Act*, the Approval Holder shall provide to the Department, a Process Flow Diagram and a Design Basis Memorandum which integrates all the operational processes for the Project. These shall be developed by Professional Engineers licensed to practice in Nova Scotia, and shall include but not be limited to:

- Identification of the specific technology and specific type of electrolysers that will be used in the facility.
- An identification and quantitative estimate of all process inputs, throughputs and outputs.
- A comprehensive list of codes, standards, and regulations used for the design, and copies of any proponent-drafted codes or guidelines proposed for use shall be provided to the Department.

4.2 As part of the application for the Industrial Approval under the *Act*, the Approval holder shall provide an Operations Management Plan. This plan shall be developed by a professional engineer licensed to practice in Nova Scotia, and shall include but not be limited to:

- Details regarding the storage and handling of oxygen, including venting, risks associated with corrosion of equipment, enhanced combustion or explosion, if near combustible materials, and how these risks will be mitigated.
- Details regarding the implementation of control systems, isolation barriers or strategies to ensure incompatible materials are not exposed during storage, transfer, use and/or accidental releases.
- Details regarding the setback distances established for storage of the chemicals used/generated in the facility, including hydrogen and ammonia, accompanied with rationale.
- A plan to mitigate hydrogen emissions, including but not limited to flaring. Details on how the flare will be maintained, identification of its fuel source and storage specifics shall be provided.
- Details about how the required amount of energy will be supplied to the facility in the case of unplanned power outage. This should include scenarios ranging from intermittent interruptions to unscheduled outages of at least 72 hours.
- Detailed measures to manage, treat or dispose of sludges generated on-site or dangerous goods or waste dangerous goods produced as part of the hydrogen or ammonia production processor.

4.3 As part of the application for the Industrial Approval under the *Act*, the Approval Holder shall provide a detailed Environmental Management Plan (EMP).

4.4 The Approval Holder shall be responsible for the costs associated with third-party review of plans, reports, or monitoring results which have been deemed necessary by the Department over the life of the Project.

5 Water Resources

5.1 The Approval Holder shall not conduct any Project activities or remove vegetation within 30 metres of a watercourse (excluding groundwater) and/or a wetland unless otherwise authorized in writing by the Department.

5.2 As part of the application for the Industrial Approval under the *Act*, the Approval Holder shall submit a site Surface Water Management Plan. This plan shall be developed by a qualified professional engineer licensed to practice in Nova Scotia and shall include, but not be limited to:

- Measures to monitor water quality and quantity, including identification of parameters to be monitored, monitoring locations, frequency and methods for sampling/testing.
- Measures to mitigate scour, flooding, sediment loading, and thermal charging related to discharges from the systems, where appropriate.
- Measures to monitor compliance and evaluate the plan's effectiveness during the different operational phases of the Project.
- Assessment of potential indirect impacts to downstream water resources (including Stream A and B and associated wetlands) with proposed mitigations and monitoring measures, where appropriate.
- Details related to the design of any on-site surface water collection ditches, pond(s) and other features, including considerations for the impacts of climate change.
- Considerations provided in the Department's Storm Water Management Policy from October 10, 2003, as amended from time to time.

5.3 Prior to commencement, the Approval Holder shall submit a detailed sediment and erosion control plan to the Department that covers industrial site activities, including roadworks. The plan shall include all clearing, grubbing, and stripping required for the Project and shall be designed by a professional engineer licensed to practice in Nova Scotia.

5.4 As part of the application for the Industrial Approval under the *Act,* the Approval Holder shall submit a Wastewater Management Plan to the Department. This plan shall be developed by a qualified professional engineer licensed to practice in Nova Scotia and shall include but not be limited to:

- Characterization of all the Project's wastewaters, their sources, estimated concentrations in untreated effluent, and identification of applicable limits based on a receiving water assessment.
- Description of the treatment process(es) for each component of the Project's wastewater treatment system, as applicable. The substances treated in the different components shall be identified, and the performance capacity of each component shall be provided.
- Identification of all discharge locations for each of the components of the wastewater treatment system, in the freshwater and marine environments, as applicable.
- A comprehensive assessment of the receiving environment including but not limited to:
    - Updated marine environment data, including sediments, and identification of aquatic species present in the receiving

environment.

- Discussion on the impact of predicted water quality on the aquatic environment based on updated assimilative capacity study, including the impact of the chemical, physical and thermal properties of the predicted wastewater.

5.5 As part of the application for the Industrial Approval under the Act, the Approval Holder shall submit a Water Conservation Plan. This plan shall be developed based on the Guide for Surface Water Withdrawals from November 2016, as amended from time to time, and shall include but not be limited to:

- Detailed information, rationale and calculations related to the raw water intake needs for the Project, including, but not limited to, a process water balance.
- Assessment of the water uses required by the different processes and water related losses throughout the system.
- Clarification on how these processes have been assessed from a water conservation perspective.

5.6 As part of the application for the Industrial Approval under the *Act*, the Approval Holder shall design and implement a groundwater monitoring plan. The plan shall be designed by a qualified hydrogeologist licensed to practice in Nova Scotia and shall include:

- site specific groundwater monitoring criteria and points of compliance,
- description of the monitoring network, location and depth of monitoring wells,
- initial baseline monitoring results, assessment of these results and a methodology to evaluate conditions over time.

6 Flora and Fauna

6.1 Prior to commencement of the Project, the Approval Holder shall provide the Wildlife Division and Regional Services Department of Natural Resources and Renewables (NRR) with digital way points and shape files showing precise locations for wetlands, and species listed under the Species at Risk Act (SARA) and/or Endangered Species Act (ESA), as well as of Species of Conservation Concern (i.e., species assessed by the Committee on the Status of Endangered Wildlife in Canada as at risk, but not listed under SARA or ESA, and all S1, S2 and S3 listed species under the Atlantic Canada Conservation data Centre) identified during field work. The data provided to NRR shall include, at minimum, the date of the field observances and habitat description.

6.2 Prior to commencement of the Project, the Approval Holder shall submit a Wildlife Management Plan to ECC, NRR and Environment and Climate Change Canada (ECCC). The plan must describe how the Approval Holder intends to meet the requirements of relevant federal and provincial legislation, including but not limited to, *ESA,* the *Migratory Birds Convention Act* and *SARA.*

7 Air Quality and Noise

7.1 As part of the application for Industrial Approval, required under the Act, the Approval Holder shall submit an Air Quality Monitoring Plan. This plan shall include, but not be limited to, sampling locations, parameters, monitoring methods, protocols, and frequency.

7.2 At the request of the Department, the Approval Holder shall develop and implement a plan to monitor noise levels. The plan shall include, but not be limited to, sampling locations, parameters, monitoring methods, protocols, and frequency.

7.3 The Approval Holder shall ensure that noise emissions at the property boundaries do not contribute to an exceedance of the maximum permissible sound levels limits specified in the Nova Scotia Environment and Climate Change "Guidelines for Environmental Noise Measurement and Assessment" (2005), as amended from time to time.

8 Archaeological and Heritage Resources

8.1 Prior to construction of the Project, the Approval Holder shall complete an Archeological Research Impact Assessment (ARIA) for the Project area.

8.2 Approval Holder shall cease work and contact the Special Places Coordinator, Nova Scotia Department of Communities, Culture, Tourism and Heritage (CCTH) immediately upon discovery of an archaeological, or paleontological site, artifact or fossil specimen unearthed during any phase of the Project. If the find is of certain or possible Mi'kmaq origin, the Approval Holder shall also contact the appropriate Mi'kmaq representatives as advised by CCTH.

9 Public Engagement

9.1 Prior to commencement of the Project, the Approval Holder shall develop and implement a comprehensive complaint resolution plan for receiving and responding to complaints related to the Project. The plan will include, but not be

limited to, a reporting system which records all complaints received, documents the steps taken to determine the cause of complaint, sets out a timeline for responding to complaints, and establishes a recording system that details all corrective measures taken to alleviate the cause and prevent its recurrence. The plan shall be made available to the Department upon request.

9.2 The Approval Holder shall appoint a contact person designated to address the complaints and shall provide the contact information to the Department.

9.3 Prior to commencement of the Project, the Approval Holder shall develop and implement a plan for the formation and operation of a Community Liaison Committee (CLC) including terms of reference, which meet the Department's Guide for the Formation and Operation of a Community Liaison Committee, as amended from time to time. The Approval Holder shall operate the CLC for the duration of the Project or until released in writing by the Department.

10 Engagement with the Mi'kmaq of Nova Scotia

10.1 Prior to commencement of Project, the Approval Holder shall develop and implement a Mi'kmaq Communication Plan, which will include but not be limited to a process for communicating Project details and seeking input from the Mi'kmaq of Nova Scotia on the development and implementation of Project mitigation and monitoring plans. The plan shall be updated regularly and be available to the Department upon request.

11 Accidents, Malfunctions and Contingency Plan

11.1 As part of the application for the Industrial Approval under the *Act*, the Approval Holder shall provide to the Department an updated Quantitative Risk Analysis (QRA) for the facility, which shall include but not be limited to:

- Modelling and mitigations for worst-case scenarios, which shall consider failed lines/or tanks and cascading effects from interactions with other production, handling or storage systems.
- Rationale for modelled scenarios.
- HAZ ID process and report.
- The main project risks from environmental and safety perspectives, with risk matrix that considers probability and severity of accidents, malfunctions and unplanned events.
- Consideration whether redesign, replacement or relocation of any facility components are required.

11.2 The Approval Holder shall submit a comprehensive contingency plan to the Department with the Industrial Approval application under the *Act*, which meets the Department's Contingency Planning Guidelines, the results of the analysis outlined in section 11.1, and as applicable, the Environmental Emergency Regulations under the Canadian Emergency Protection Act. The Plan shall provide prevention measures and address plans for dealing with accidental occurrences, including but not limited to:

- Spills or releases of hydrogen, ammonia (gas or liquid), hydrocarbons or other hazardous materials (e.g., sodium hydroxide, hydrochloric acid, etc.) for all the Project's processes, which include production, delivery and end use.
- Loss of electrical power.
- Failure of wastewater management facilities and erosion and sediment control measures, fires, and vehicular collisions.
- Fire, explosions and/or hazardous interactions.

11.3 The Approval Holder shall develop an emergency evacuation plan to be distributed to the Department, the Town of Port Hawkesbury, Municipality of the County of Richmond, Nova Scotia Emergency Management Office and local police and fire departments for review prior to the start of operation of the facility. A draft of this plan must be submitted to the above noted organizations at least six months in advance of operation of the facility and be finalized prior to commencement of operations.

11.4 The Approval Holder shall submit with the Industrial Approval application, required under the Act, a surface water contingency plan. This plan shall identify timelines for response and the measures to be taken if unacceptable effects to water quality or quantity of residential and or municipal water supplies occur due to project activities. The Approval Holder shall address the problem to the satisfaction of the Department.

11.5 The Approval Holder shall maintain or provide sufficient resources on site, or in coordination with local fire departments, to handle the spill, release or inadvertent or adverse reaction of any dangerous goods or waste dangerous goods used or produced at the facility.

12 Securities

12.1 The Approval Holder shall submit security, in the form and amount determined by the Department, with the application for an Industrial Approval under the Act.

13 Decommissioning and Site Reclamation

13.1 As part of the application for the Industrial Approval under the Act, the Approval Holder shall include a preliminary decommissioning/reclamation plan.

Honourable Timothy Halman, MLA
Minister of Environment and Climate Change