

# ENVIRONMENTAL PREVIEW REPORT ADDENDUM 1

FERMEUSE HARBOUR DEVELOPMENT PROJECT

Fermeuse Enterprises Limited



## INDUSTRY

21 | 03 | 2016

REPORT ADDENDUM 1

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**ENVIRONMENTAL PREVIEW REPORT**  
**IN ACCORDANCE WITH THE**  
**Guidelines for an Environmental Preview Report for the Fermeuse Offshore Marine Base**  
**FOR**

**FERMEUSE HARBOUR DEVELOPMENT PROJECT**  
**AT**  
**FERMEUSE, NL**

**Submitted to:**

Hon. Minister  
Environment and Conservation  
P.O. Box 8700  
St. John's, NL  
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**Submitted by:**

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March 21, 2016

The following Addendum is issued in response to the December 23, 2015 letter from the Minister of Environment and Conservation requesting amendments to the EPR Report submitted by Fermeuse Enterprises Limited on September 16, 2015.

## Addendum

**Item 1: Section 4.1.2.2,** replace with the following:

In November 2014, a Marine Habitat Characterization Survey was completed by LGL Limited for Fermeuse Enterprises Limited (FEL). The report gives a detailed physical and biological description of Lumley Cove and can be found in Appendix B of this report.

The various marine and surficial types observed within the project area during the marine survey are very typical of the Newfoundland coastal region and it would be reasonable to expect that various finfish, marine mammals and shellfish species that are typical to the Newfoundland coastal region could possibly be transient in the project area. Due to the pre-existing decades of activities and associated noises with an active fishing harbor, including docking, repair centers, and fish processing, and considering the general location of the project site, it is extremely unlikely that there would be any aggregations of these typical marine species in the area. The survey noted that there were no species at risk in the project area.

**Item 2: Section 4.1.2.3,** add the following paragraph to the end of the section:

Public comments and concerns were taken into account in developing the layout of the facility to minimize the impact to adjacent residents. The project will also follow any and all development guidelines, zonal planning and/or bylaws required by the Town of Fermeuse Planning.

**Item 3: Section 4.1.2.5,** replace with the following:

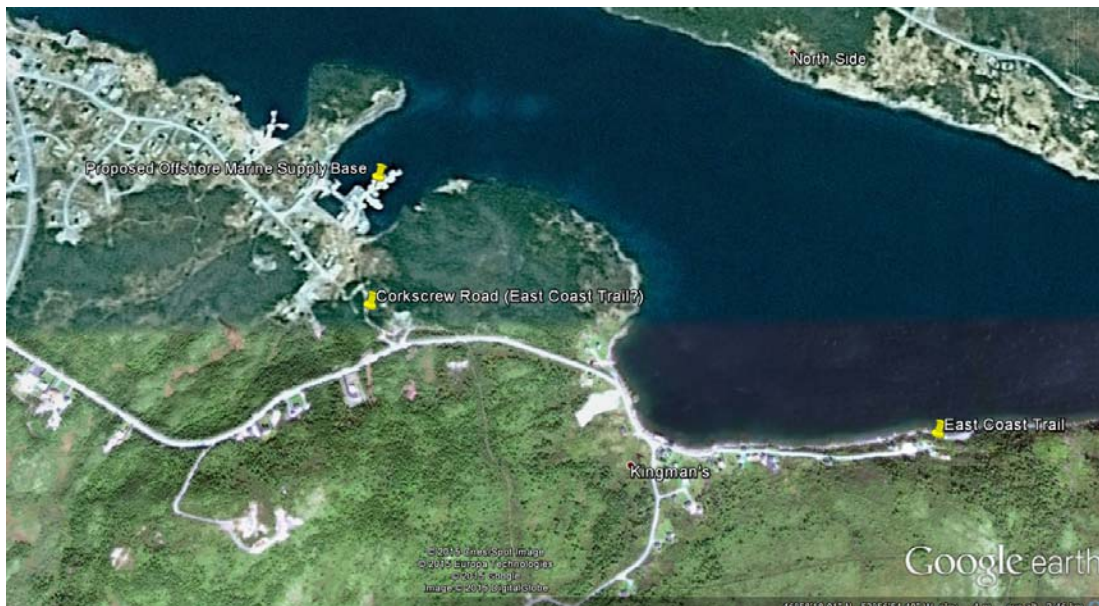
There are two protected surface water intakes that supply Fermeuse with fresh water. One is located approximately one (1) kilometer from the project site at Merrymeeting Pond, while the other is 1.6 kilometers from the project site at Bear Cove Pond.

There are three public wells located on the North Side of Fermeuse Harbour at Port Kirwan. The closest public well to the project site is located 900 metres away and is an unprotected groundwater wellhead site. The remaining two public well sites are greater than 1.4 kilometers from the project site. The closest private well is 800 metres from the project site.

The Water Resources Management Division (Groundwater Section) was consulted during the preparation of the project EPR. FEL received a response from Ms. Dorothea Hanchar which included an Excel file with a list of water wells in the Fermeuse area. The list was discussed with the Town of Fermeuse and FEL was informed that a majority of the private wells listed were abandoned and not in use. Wells were plotted on a map using Google Earth and it was determined that there was one private well that is approximately 800 metres from the project site. However, due to the large elevation difference between the property and the project site, blasting operations will in no way affect a well at this property.

**Item 4 Section 4.1.2.6**, replace with the following:

A small dirt road to the east of the existing intersection near the fish plant has been identified as being part of the East Coast Trail. This road is known locally as Corkscrew Road. The East Coast Trail Association (ECT) requests assurance that the marine base development will not interfere with the safe passage of hikers through Corkscrew Road. The ECT also requests that certain engineering designs or best practices will be put in place to ensure hikers are not endangered by heavy vehicle traffic associated with the marine base.



**Figure 7: Walking trails near proposed site (Google Earth).**

FEL acknowledges and fully agrees with the ECT's request for a right-of-way for hikers up or down Corkscrew Road. As indicated to the ECT in private by FEL, the proposed access road(s) to the site will not interfere with access to Corkscrew Road. Furthermore, FEL fully agrees that a four-way stop or similar traffic control mechanisms will be included where site access and public roadways intersect. As well, FEL will demand best practices are followed onsite, e.g., mandatory driver training, gated access, onsite tolerances, etc.

The designated parking area in Kingman's Cove for the ECT is well beyond the footprint of the project. It is located at the end of Kingman's Cove Road, approximately 1.35 kilometers from site (see Figure 7). This area is not included in FEL's short or long term plans in any way.

No other tourist attractions have been identified in the Town of Fermeuse. The Southern Avalon Development Association's website lists "Hunting and Fishing" and "Bird and Whale Watching" as other tourist attractions. However, there are no known tour guides or outfitters operating out of Fermeuse.

**Item 5: Section 4.2, replace with the following:**

The construction of the marine base involves demolition of the existing wharf structures in Lumley Cove. Following the demolition and removal of these structures the contractor will begin site clearing, excavation and backfilling, as well as phased construction of the new wharf structures. Clearing and excavation onshore will occur only when absolutely necessary to maintain construction schedule and will be kept within the project footprint.

The activities related to construction include:

- Tree cutting, grubbing and clearing;
- Top soil stripping;
- Construction of site road;
- Marine construction, including pile driving;
- Infill behind wharf structures;
- Installation of site services, e.g., water, sewer, electrical, fuel, etc.;
- Installation of new site buildings, e.g., administration, warehouses, fabrication shops, etc.;
- Paving and landscaping;
- Transportation.

A site plan for each phase of development has been developed and is presented in Appendix C. The conceptual site plans include locations for buildings, wastewater treatment plant, water treatment facilities and treated water tanks. The final location of these items will be determined during the design phase of the project. Locations identified on the drawings should be treated as "potential locations". Visual renderings of the fully developed facility from various vantage points can be found in Appendix D.

**Item 6 Section 4.2.5**, add the following paragraph:

As stated in Section 5.1 of the Migratory Birds Convention Act, “no person [...] shall deposit or permit to be deposited oil, oil wastes or any other substance harmful to migratory birds in any waters or any area frequented by migratory birds.” As such, FEL will ensure that all precautions and appropriate best practices are taken by staff and contractors to prevent fuel leaks from equipment, and that a spill contingency plan is prepared. FEL will ensure that staff and contractors are made aware of this prohibition. Biodegradable alternatives to hydraulic fluid for heavy machinery are commonly available from major manufacturers. Such biodegradable fluids will be used in place of petroleum products whenever possible, as a standard for best practices. Fueling and servicing of equipment will not take place within 30 meters of environmentally sensitive areas, including shorelines and wetlands.

**Item 7: Section 4.2.8**, replace text with the following:

The Town of Fermeuse is currently involved in a three year project to upgrade their town water system. Currently the Town has tendered the first of three tenders for the upgrade. Currently the Town uses Merrymeeting Pond as its source of water. Merrymeeting Pond has always been sufficient to supply the Town and the fish plant which, historically, was often in production for 24 hours a day. The new upgrade will change the water source to Bear Cove Pond, a much larger water source. The new system is expected to increase pH and reduce colour, the only two parameters currently outside the Guidelines for Canadian Drinking Water Quality. It is expected that once the upgrades are completed, the Town will have sufficient capacity to accommodate the demands associated with Phase 1 of the project.

The full project build out will be phased in over many years, if not decades, mainly based on demand from the offshore oil industry. The requirements for additional water supply will be developed based on growing business opportunities and emergent demand. If the marine base activities out-grow the current water supply to the site, FEL will make strategic investments to safely and prudently develop additional water sources. However, FEL recognizes that all future planning decisions related to the water supply must be made in consultation with and through the permission of the Town of Fermeuse. Furthermore, FEL acknowledges that it is ultimately responsible to cover the costs for any water infrastructure upgrades that are required if its peak flow demands cannot be supplied by the Town. FEL recognizes that it will be subject to municipal permitting and that its costs related to water management and development may include related planning and construction cost for future upgrades to the municipal system that are required because of the marine base. FEL looks forward to a positive relationship with the Town in these matters and recognizes that there will most likely be mutually beneficial opportunities for cooperation leading to productive cost sharing, taxation, or related water management agreements between FEL and the Town. The Town has been included in the planning of the project with regards to water and sewer, and they are aware of the potential need for increased peak water demands in the long term. Both FEL and the Town are committed to structuring agreements which will ensure that the Town’s water supply is not compromised.

In any case, in the short, near and long term, peak demand to fill storage tanks on vessels are for short durations only and, if necessary, be coordinated at off peak hours for the Town and the rest of the facility.

The estimated water usage/wastewater produced from the fully developed project site is as follows:

Wastewater Produced (peak) = 5.76 litres per second (L/s)

Water Usage (peak) = 70 L/s

**Assumptions:**

- Approximately 275 employees working on the site.
- Approximately 50 employees working 8 hour shifts in all administration buildings.
- Estimated sewage flows for 24/7 employees based on “Guidelines for the Design, Construction and Operation of Water and Sewage Systems” by the Department of Environment and Conservation (DOEC)
- Estimated sewage flows for 8 hour employees based “Wastewater Engineering” by Metcalf and Eddy.
- Infiltration rates based on DOEC guidelines.
- Two berths can be using the water supply at any one time.
- Berths use water at a rate of 33L/s. (short duration to fill storage tank)
- Water peaking factors from DOEC guidelines.

The Proponent confirms that the existing water supply to the site is sufficient to satisfy the needs for Phase 1. With regards to Phase 1 of the project, operational procedures will be implemented to ensure that only one supply vessel can be supplied water at one time. Therefore, the peak water usage would be closer to 35 L/s. Also, if necessary, operational procedures can be implemented to ensure that ships fill water tanks during off peak hours only, e.g., during the nighttime. As well, measures can be taken, if necessary, to fill ship water tanks at slower rates, thus decreasing peak water usage requirements. Because these types of practical and low cost operational choices exist, it is fully expected that the Town’s existing infrastructure is sufficient to meet the demands of Phase 1 of the project.

In a meeting with Municipal Affairs (Municipal Infrastructure and Waste Management) on March 8, 2016, FEL was informed that the Town’s upgraded water system is designed for 600 gallon per minute (37.9 L/s). As well, in an email from Municipal Affairs on March 10, 2016, it is confirmed that the consultant currently responsible for tendering Phase 1 of the Town’s water infrastructure upgrades

were contacted and “they have advised that they have no concern with the facilities ability to handle the 70 L/s peak flow.”

There are no immediate plans by the Town of Fermeuse to upgrade sewage infrastructure. The fish plant is connected to the existing infrastructure and there are, nor never have been, issues or concerns with demand. During peak operations Phase 1 of the project is not expected to employ as many people as the current fish plant building, which most recently has operated as an office/fabrication facility. The wastewater from Phase 1 will not increase volumes of wastewater into the Town sewerage system and, therefore, there will be no trigger for Federal Wastewater Systems Effluent Regulations.

Transport Canada’s “Vessel Pollution and Dangerous Chemicals Regulation” states in Division 4, Subdivision 5 that “...sewage may be discharged if in the case of a vessel that is in Section I waters or Section II waters, but not in the inland waters of Canada or a designated sewage area, and that is of 400 gross tonnage or more or is certified to carry more than 15 persons, the discharge is made at a distance of at least 12 nautical miles from shore and, if it is made from a holding tank or from facilities for the temporary storage of sewage, at a moderate rate while the vessel is enroute at a speed of at least 4 knots”. Therefore, it is fully anticipated that vessels using the facility will follow Transport Canada regulations and discharge waste at least 12 nautical miles from shore as they travel to and from the supply base. No wastewater from vessels will be offloaded at the marine base.

During construction of Phase 2, a wastewater treatment facility will be placed on site to treat sanitary wastewater. The proponent feels that there should be an opportunity for the Town and the marine base to introduce a shared sanitary wastewater treatment plant that would be designed to meet the demands of the marine base and the Town. The capital cost for the treatment facility could be cost-shared or negotiated between the Town and the marine base. For example, if the population of the Town increases due to employment at the marine base, there may be new requirements for the Town to upgrade their treatment methods. This should further make the opportunity for a shared system much more attractive from the Town’s point of view, but in any case the Proponent will look forward to working cooperatively with the Town to address such common infrastructure requirements. If a shared system is deemed not desirable, the project plans to construct a standalone sewerage treatment plant for future phases of the project beyond Phase 1. The system will meet all necessary requirements of the Federal Wastewater System Effluent Regulations.

Currently, the Town of Fermeuse has a sewer outfall pipe at Sheep’s Head. The proposed development shows that in Phase 2 the outfall would be impacted by construction. If a shared wastewater facility is not opted for, the Town’s outfall pipe would have to be extended to ensure that it is outside of the proposed development. Cost associated with extending the sewer outfall would be carried by FEL. All work required for sewer upgrades would occur during the early stages of Phase 2 of the project.

Electrical services for the facility should not pose any risk to current capacity in the area. There is a 69 kV line near the Town with several power generation plants and power generating wind turbines in the area (see Figure 12 below). Upgrades may be required to bring electrical services into the site, but the overall capacity available will be sufficient.



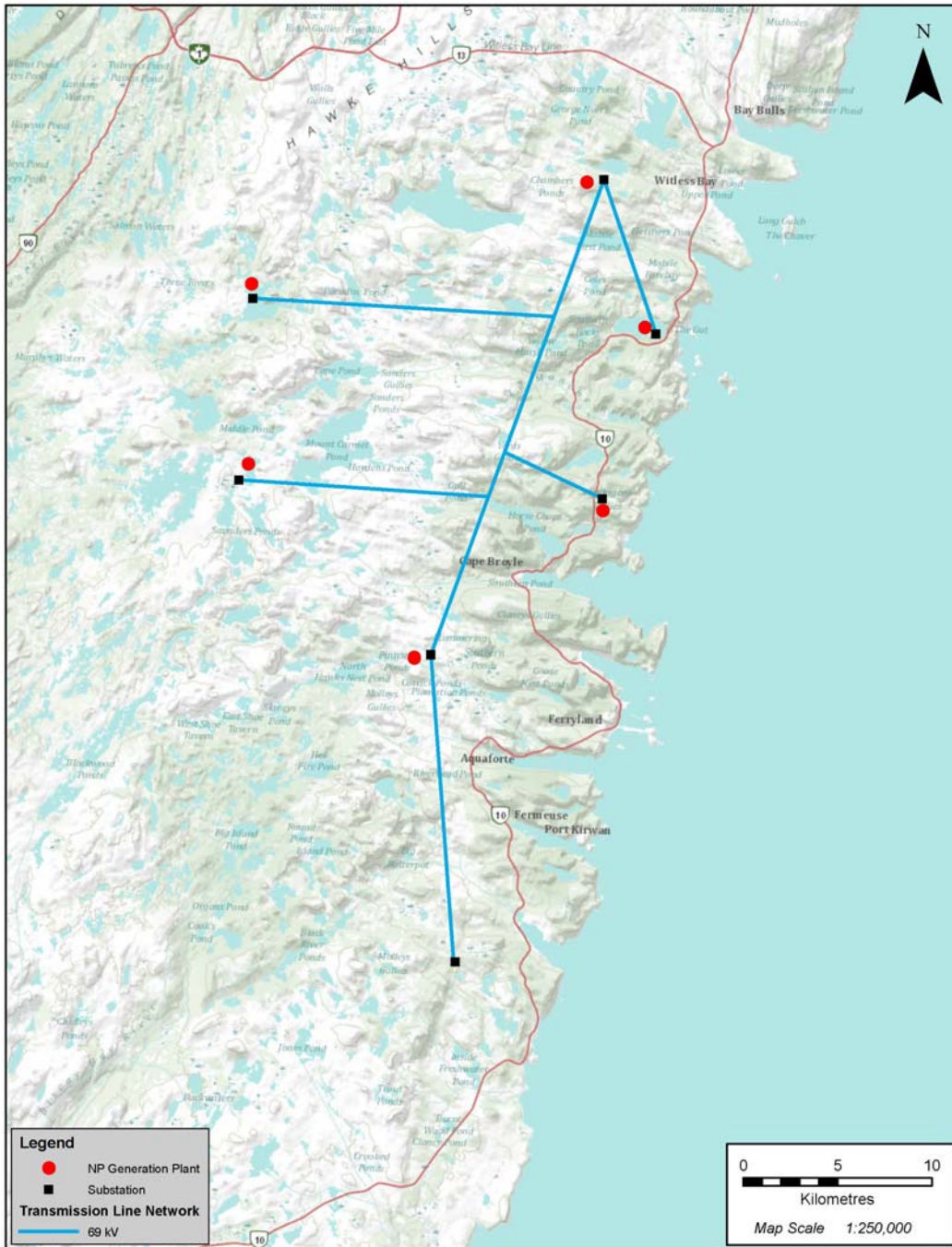


Figure 12: Transmission line network along Southern Shore Highway

**Item 8: Section 4.2.9**, replace with the following:

There will be employment opportunities during the construction phase of the offshore marine base in Fermeuse. The construction period will require between 25 and 50 people per phase to build site roads, construct wharf structures and site services.

Occupations anticipated to be essential for this project include, but are not limited to:

- Contractors and supervisors (construction trades);
- Crane operators;
- Electrical power line and cable workers;
- Engineers (construction);
- Heavy equipment operators;
- Iron workers;
- Labourers and helpers;
- Truck drivers;
- Welders;
- Carpenters.

Table 2 outlines the expected employment volumes for a typical 15 month construction phase. At this time, it would be assumed that if construction is longer or shorter for a particular phase, the employment portions required would be a ratio of the given numbers.

Construction work will be tendered locally to construction contractors capable of completing construction projects of the proposed magnitude. Therefore, construction employment will not be directly hired through the marine base but through the construction contractors completing the work. Employment related to project management during construction would be directly hired through the marine supply base and would include a senior project manager, project controller, construction manager and operations manager.

Offshore Base Construction Project																		
Total construction period of 15 months																		
Fermeuse Enterprises Limited																		
Month	NOC 2006	Employment Status	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	Total Months
Project Management	0016	Senior Project Manager	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15
	0111	Project Controller	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	11.25
	0711	Site Construction Manager	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	22.50
	0721	Operation Manager	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	11.25
Ground Work Preparation	0721	Foreman	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	11
	7611	Labourers / trade helpers	10	12	12	13	13	13	10	10	10	10	10	2				115
	2154	Surveyor	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	11
	7421	Heavy Equipment Operators	4	4	4	4	6	5	5	5	4	4	4					45
Quay And Harbour Dev.	0721	Foreman	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8
	7611	Labourers / trade helpers	5	5	5	6	6	8	10	9	3	6	1					53
	7371	Cran Operator	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7.00
	7421	Heavy Equipment Operators	1	1	1	2	2	2	2	2	1	1	1	1	1	1	1	13
	7236	Iron Worker	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7
	2154	Surveyor	1	1	1	0.5	0.5	0.5	0.5	0.5			1	1	1	1	1	6
	7237	Welders	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7
Building construction	7205	Building Const Foreman	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12
	7271	Carpenters	4	4	6	9	6	5	8	1	1	2	1	1	1	1	1	42
	7237	Welders	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	18
	7236	Iron Worker	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	18
	7611	Labourers / trade helpers	6	8	8	10	8	7	9	3	4	4	4	4	3	2		64
	7202	Electrical Foreman	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	11
Electrical Installation	7242	Electricians	1	2	3	4	5	4	3	2	2	2	2	2	2	1	1	29
	7611	Labourers / trade helpers				1	1	1	3	4	3	3	3	3	3	3	3	20
	2241	Programmer / Technician											1	1	1	1	1	4
	2132	HVAC Foreman (Mech. Engines)						1	1	1	1	1	1	1	1	1	1	5
Piping Installation	2232	Technicians						1	3	3		1	1	1	1	1	1	11
	7203	Piping Foreman				1	1	1	1	1	1	1	1	1	1	1	1	9
	7252	Pipelitters / plumbers				1	1	1	1	2	2	1	3	1	1	1	1	14
	Total persons per month / total months			20	22	48	57	66.5	66.5	68.5	75	45.5	52.5	36.5	18	13	7	4

Table 2: Construction employment estimates

At this time the number of apprentices and journeypersons that will be employed during the construction and operational phases of the project is unknown by the Proponent. Each phase of construction will be tendered to local contractors who will perform the construction work with their own workforces. FEL is committed to monitor employment throughout the life of the Project, including construction and operation phases and to providing quarterly summary reports to AES. Quarterly employment reports will include but may not be limited to:

- Total employment numbers by 4 digit National Occupational Classification (NOC) code;
- Full-time and part-time employment numbers;
- Location and source of workforce;
- Employment by gender; and
- Number of apprentices and journeypersons for each NOC code.

During each construction phase, quarterly employment reports will be completed by FEL project managers with input from the contractor and reports will be submitted directly to AES.

FEL anticipates no additional/specialized training for construction or operations of this project. The construction of the offshore supply base will be basic marine construction and earthworks similar to many other projects constructed by local contractors in Newfoundland and Labrador. The need for additional/specialized training for operations is not anticipated and we expect that qualified personnel would be available in the workforce to fill all fulltime positions at the offshore marine supply base.

**Item 9: Section 4.2.10**, replace with the following:

The offshore marine supply base will be an equal opportunity employer but will attempt to target higher participation among women in the work force during construction by:

- Requiring contractors to indicate in their tender bids how they intend to employ women by outlining their proposed women's employment strategies, including employment targets, apprenticeship opportunities, and training opportunities to be carried out during the term of the construction contract.
- Communicating the importance in supporting women in non-traditional roles throughout the process, including delivery of specific employment opportunity information sessions in the local area which highlight opportunities for women in the short and long term.

- Execute a zero-tolerance discrimination and harassment policy to contractors working on site.
- Ensure that appropriate washroom and change facilities are available to accommodate women on site.
- Requiring all contractors to report to Proponent on employment metrics by NOC code, gender, number of workers, and duration of work (hours) within three months of the start-up of contracted work.
- The Proponent will submit an annual report to the Women’s Policy Office, and have an annual meeting with them on accomplishments of FEL’s Women’s Employment Strategies, including the status of both quantitative and qualitative measures identified in the Development Plan.”
- The Proponent will engage with the Women in Resource Development Corporation (WRDC) and The Office to Advance Women Apprentices (OAWA) as necessary to assist contractors in sourcing qualified tradeswomen and apprentices as well as to develop and/or deliver workplace diversity training and policies to help ensure an inclusive and supportive work environment.

**Item 10 Section 4.2.13**, replace with the following:

Gerald Penney Associates Limited conducted research and field investigations to produce a Historic Resources Impact Assessment for the project area. As a result of the field investigations two potential archaeological sites were identified near the project foot print.

The Historic Resources Impact Assessment can be found in Appendix B.

As a result of the Archeological Impact Assessment and the Provincial Archaeology Office review, FEL acknowledges the following:

- Riverhead (Area D, CfAf-29) will require a Historic Resources Impact Assessment to be undertaken prior to any ground disturbing activities associated with the proposed finger pier construction occurring.
- Lumleys Cove (CfAf-31) requires further recording of the wall/quay and ballast bed prior to any ground disturbing activities occurring.

- Lawes Point-1 (CfAf-36) requires further testing/recording of the habitation features noted at the archaeological site prior any ground disturbing activities occurring.
- Steel Point-1 (CfAf-37) requires further testing/recording of the habitation features noted at the archaeological site prior any ground disturbing activities occurring.
- Any proposed expansion of the project footprint, such as eastward towards Kingman's Cove, will be subject to review by the Provincial Archaeology Office.

**Item 11: Section 4.2.16**, replace second paragraph with the following:

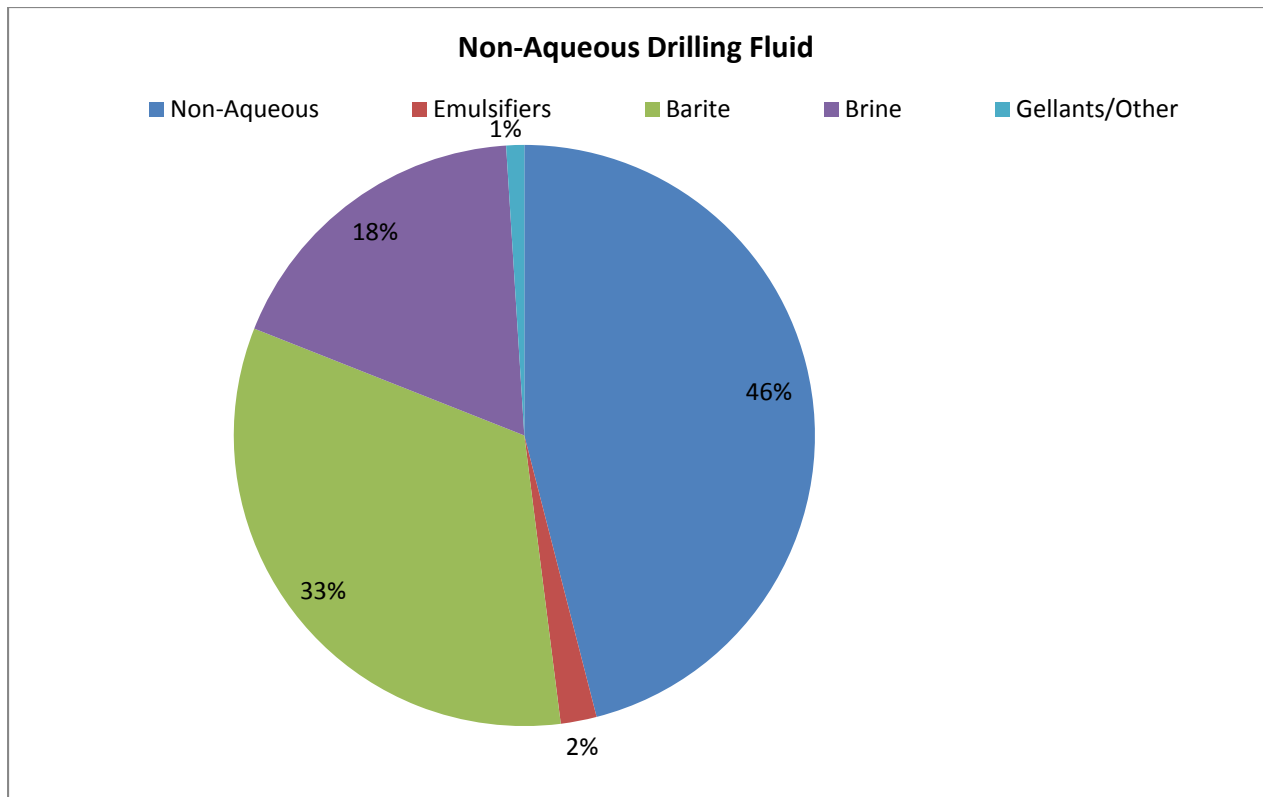
Noise and light during construction can have adverse effects on human, marine and avian life. Human effects will be experienced largely in the daylight hours. Activities that will cause the great effect are pile driving and blasting operations. These activities will occur during normal work hours and daylight hours between 0800 and 1800 hours. Pile driving activities will have the greatest effect on marine life. Pile driving has been known to effect fish with swim bladders. The use of explosives in or near water can cause damage to the swim bladder of fish and there are marine species that it can also cause rupture and hemorrhage to internal organs if within close proximity during these operations. A habitat survey has been completed which indicates that commercial marine life in the area of construction is minimal.

**Item 12: Section 4.3.1.4**, replace with the following:

There will be storage and handling of bulk and hazardous materials related to the offshore industry at the project site. Drilling fluids and muds typical to the offshore industry will be stored and handled at the site and may include non-aqueous drilling fluids of Group I, II or III. It is expected that there could be 12-150 m<sup>3</sup> storage tanks full of drilling fluids at one time, for a total quantity of 1800 m<sup>3</sup> of drilling fluid. It is unknown at this time what type(s) of drilling fluids will be required at the site.

Group I, Non-Aqueous drilling fluid is most hazardous with the highest percentage of Aromatic Hydrogen content (5-35%). Group I uses Crude Oil, Diesel and conventional Mineral Oil as it is a Non Aqueous fluid. Group II Drilling fluid contains low-toxicity Mineral Oil as it is Non-Aqueous fluid. It has an Aromatic Hydrocarbon content 0.5-5%. Group III drilling fluids contain highly refined Mineral Oils (Ester, Linear Paraffin, highly processed Mineral Oil, etc.) as it is Non-Aqueous fluid. It has an Aromatic Hydrocarbon content of less than 0.5%.

Below is a typical non-aqueous drilling fluid composition by volume:



**Figure 13: Typical Non-Aqueous Drilling Fluid Composition by Volume**

If a Group I non-aqueous drilling fluid is required to be stored at the site, appropriate handling and storage protocols will be established that follow requirements of the Department of Environment. The storage of such materials will be limited to a tank farm as identified on the conceptual drawings, or to designated warehouses specifically designed for such storage. A containment dyke will be constructed around the tanks to prevent any environmental contamination due to tank malfunction. Containment systems will be required at the fuel storage facility and chemical storage areas in accordance with the requirement of the Provincial Department of Environment.

As stated in Appendix 6 of "Drilling Fluids and Health Risk Management" (IPIECA/OGP), Table 3, list all potential additives to drilling fluids. At this time it is unknown which (if any) of these chemicals will be stored on site. If any of these additives are required for storage or handling, it will be done following all Transport Canada's regulations for the storage, handling and transport of such materials.

**Table 3: Potential Additives to Drilling Fluids**

Potential Additives to Drilling Fluids		
Fresh Water	Sea Water	Brine
Saturated NaCl	CaC12	Salts (KCl)
ZnBr/CaBr	Formates	Barite (barium sulphate)
Calcium Carbonate	Iron Carbonate	Hematite
Ilmenite	Bentonite (or other clays)	Organophillic clay
Biopolymers	Carboxymethyl cellulose	Polyanionic cellulose
Polysaccharide	Synthetic polymers	Modified polyacrylates
Lignosulphonates	Tannins	Starch
Modified lignites	Asphalt	Resins
Gilsonite	Clycols (polyglycols)	Silicate
Gypsum	Polyacrylamides	Modified PAC
NaOH/KOH	Ca(OH)2	Citric acid
NaHCO3	Bactericides	Lubricants
Lost circulation aterial	Polymer stabilizers	

**Item 13: Section 4.3.3.3**, replace with the following:

The drilling fluids and chemicals used or stored at site will be controlled by highly qualified and experienced companies operating to globally recognized standards that lease space at the site. It will be mandatory for any and all chemicals relating to offshore operations to be identified in project registration documents in advance of each individual project or operation for which they may be required.

Diesel fuels and base oils will be maintained on site. Fuel, for example, will be used to refuel ships using the marine supply base and to refuel land-based equipment, while base oils may be used as a lubricant, motor oil, etc. All fuels and oils will be stored in properly designed, regulated and certified storage tanks or containers. Properly designed containment structures will be constructed around fuel tanks, or oil tanks, if applicable, to ensure containment of diesel fuel or oil in the event of a tank fail.

While outbound (to the offshore) drilling fluid services, i.e., drilling mud plant, and inbound (from the offshore) tank cleaning services will be provided at the base, there are no intentions to provide inbound waste management or drilling mud/cuttings recycling services (inbound slops or waste will be quickly transitioned off site to designated management facilities elsewhere on or off the island). Dry bulk, e.g., barite, and related drilling fluids will be stored in properly designed and maintained vertical storage silos or tanks near the water. As well, temporary storage tanks will be established and used for transitioning tank cleaning remains and inbound cuttings or waste to designated offsite treatment facilities. The



drilling fluid tank farm and all permanent or temporary storage tanks will have properly designed (fully banded) containment areas to ensure that no fluids enter the water in the event of a leak.

Outbound drilling fluid service management will vary based on specific offshore production requirements and will include the variety of well-known and accepted chemicals and minerals, e.g., bentonite (gels), barite, calcium carbonate, methanol, glycol, base oil, potassium formate, brinds, gravel packs, cement, etc. The majority (80%) of these chemicals and minerals are benign under Transport Canada's Transportation of Dangerous Goods (TDG) safety standards and regulations, whereas additional measures will be implemented to cover the approximate 20% of items that may fall under TDG rules, e.g., items carrying HAZMAT Class 3 or 8 designations. Potential chemicals carrying Hazmat Class 3 and Class 8 designations can be found in Table 5 and Table 6, respectfully. As stated above, these specialized services and product management activities will be provided by expert companies who will be required to maintain total safety and product management practices. Furthermore, a dedicated and secure warehouse of 8,000-10,000 square feet will be established onsite to house and protect the various the outbound drilling fluid service management and product storage services. Table 7 outlines the estimated quantity of chemicals that will be stored on site.

**Table 5: Hazmat Class 3 Substances**

HAZMAT Class 3 Substances		
Crude Oil	Tannins	Mineral Oil
Asphalt	Diesel	Lubricates
Biopolymers	Lignosulphonates	

**Table 6: Hazmat Class 8 Substances**

HAZMAT Class 8 Substances		
Brine	Ilmenite	ZnBr/CaBr
Bentonite	Barite	Organophillic clay
Calcium Carbonate	Lignosulphonates	Iron Carbonate
Silicates	Hematite	NaOH/KOH
Ca(OH) <sub>2</sub>	Citric Acid	Bactericides
Emulsifier		

**Table 7: Estimated Quantity of Chemicals to be Stored on Site**

Substance	% Drill Fluid	Estimated Quantity
Barite	33	600 m <sup>3</sup>
Brine	18	325 m <sup>3</sup>
Emulsifier	2	40 m <sup>3</sup>
Non Aqueous Fluid (Crude, Diesel, Mineral Oil)	46	830 m <sup>3</sup>
All other Additives Combined ~ 10% of Drilling Fluid Volume	-	180 m <sup>3</sup>

All Federal and Provincial regulations, including Environment Canada’s Environmental Emergency Regulations, will be followed during storage and handling of all materials stored on site.

**Item 14: Section 4.3.4,** add to 4<sup>th</sup> bullet point:

- Continued communication with the Women’s Policy Office, Women in Resource Development Corporation (WRDC) and The Office to Advance Women Apprentices (OAWA) to advance women in non-traditional occupations and in apprenticeship.

**Item 15: Section 6.1,** replace with the following:

Disruption to marine and vehicular traffic is expected during the construction period. Marine traffic should be minimally impacted, or not at all, because only a small portion of the harbour will be occupied during construction. Marine traffic lanes will be kept clear and traffic in and out of the harbour will be undisturbed. The greatest impact on vehicular traffic will occur during Phase 1 of construction. During this time, the proposed alternative site access road will not be completed. Therefore, construction materials and construction vehicles will have to use Lumley Cove Road during Phase 1, although it is anticipated that once the main construction equipment has been moved on site it will remain there throughout the construction phase resulting in minimized movements.

During Phase 1, the expected traffic to and from the facility will be mainly personnel working at the site and also semi-trailer truck traffic making deliveries to and from the site. Semi-trailer truck traffic has occurred on Lumley Cove Road for many years servicing the fishing industry. The site and eventual (Phase 2) access road layout will allow adequate access and parking for personnel working at the marine base, and will help minimize traffic congestion caused by the new facility. Once Phase 2 commences, the site can be alternately accessed by Lumley Cove Road.

Noise will be consistent with any heavy construction marine project. The most impact during construction will be caused by pile driving activities and blasting operations. Pile driving and blasting will be limited to common work hours and will only be completed between 0800 and 1800 hours. Generally, construction will not be ongoing for 24 hours and construction activity will occur during daylight hours. To reduce noise levels during construction and operations, a setback or minimum distance between the areas of highest noise and the nearest residence will be used. In addition to using setbacks wherever possible, earth berms will be incorporated into site development to act as a sound barrier between the site and residences.

Lighting during construction will be minimal because construction activities will generally be completed during daylight hours. However, it is possible when completing marine projects that certain activities must follow tide schedules. It's possible that construction will have to occur when tides are at the lowest levels which may be between dusk and dawn. Flood lights would be used in such a case, but concentrated in the area of construction. Night construction will be minimized and avoided whenever possible. To prevent unnecessary light during normal site operations, the amount of light projected upward will be reduced as much as possible by projecting all light fixtures downwards. During the night, only lights deemed necessary for site operations will be turned on.

Proper measures will be taken to ensure that dust is controlled during construction and operations. Exposed soil, stockpiles, and earthmoving activities are expected to suspend dust into the air. Dust will be controlled during the construction phase by spraying storage piles and/or exposed soils/surfaces with water, when deemed necessary. Vehicles carrying soil, aggregates, or fine material that are likely to cause excessive dust will be covered. Construction activities will be planned to limit the area of exposed soils and the amount of time that soil is exposed. Exposed areas will be re-vegetated or covered as soon as it is reasonable to do so to prevent excessive dust during both construction and operation period. There are very few dust control concerns associated with operations, but monitoring will occur and effective controls will be implemented as necessary.

The project will avoid using explosives in or near water wherever possible. Use of explosives in or near water produces shock waves that can damage a fish swim bladder and rupture internal organs. Blasting vibrations may also kill or damage fish eggs or larvae.

If explosives are required as part of a project in or near the water the potential for impacts to fish and fish habitat will be minimized by adhering to "Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters" (Wright and Hopky, 1998) and mitigation measures provided therein where applicable.

As recommended by Environment Canada, the following beneficial management practices for working on shorelines will be followed:

- Staff, contractors and visitors will not approach concentrations of seabirds, sea ducks or shorebirds;

- All vessels will use the main navigation channels to get to and from the site; and will have well muffled machinery;
- Staff and contractors will undertake any measures that may minimize or eliminate discharge of oily waste into the marine environment;
- Food scraps and other garbage left on beaches and other coastal habitats can artificially enhance the populations of avian and mammalian predators of eggs and chicks. FEL will ensure that no litter (including food waste) is left in coastal areas by their staff and/or contractors; and
- If there is any noticeable change in seabird numbers or distribution at the location during operations, Environment Canada shall be notified.

**Item 16: Section 6.2**, replace with the following:

Lumley Cove is approximately 10 km from the Witless Bay Ecological Reserve. Mitigation measures will be implemented to minimize the attraction of seabirds to site lights, to minimize the risks to birds blown onto the site due to environmental conditions, to prevent and contain the accidental release of fuel, and to prevent destruction and harm to nests, eggs, and nesting birds during construction and operations. Increased awareness of migratory birds will be maintained during the breeding season, i.e., April 15<sup>th</sup> to August 15<sup>th</sup>.

In order to minimize the attraction of seabirds to site lights, all lights on site will be effectively projected downwards to minimize the amount of light projected upward, spill light, glare, and artificial sky glow. In addition, lighting will be reduced by turning off all unnecessary lights, especially at night and during migratory season.

Due to the proximity of the Witless Bay Ecological Reserve and due to the propensity of seabirds (particularly storm petrels and newly-fledged puffins) from that reserve to be attracted to light, it is likely that migratory birds will be attracted to and potentially be stranded on the site. Environment Canada has recommended that a site monitoring plan be developed for the migratory bird breeding season as well as the spring and fall migration periods and implemented while floodlights are being used during nighttime hours. A site monitoring plan could include protocols such as dusk and dawn site inspections to look for petrels or puffins that may have landed on site, and/or inclusion of migratory bird searches into standard occupational health and safety daily inspections, etc.

Should puffins and/or storm-petrels become stranded on the project site, both during construction and operations phases, FEL will adhere to The Leach's Storm-Petrel: General Information and Handling

Instructions. If a permit is required, FEL will advise that such a permit is in place prior to the initiation of proposed activities. If any other migratory birds (e.g. Black-legged Kittiwake, Black Guillemot, etc.) are found stranded on-site, the Proponent shall immediately contact Environment Canada for further instructions.

Several measures will be taken to minimize the risks to birds blown onto the site due to environmental conditions. In order to prevent birds from coming into contact with hazardous substances, an emergency contingency plan will be developed to help prevent accidental releases and ensure adequate preparedness and capacity to respond to and recover from any accidental events should they occur. The destruction or harm to nests, eggs, and/or nesting birds will be avoided. During both the construction and operation periods, if there is a potential to disturb migratory birds and/or their nests/eggs, work will be stopped immediately and a qualified professional will be consulted to determine the best course of action. If a nest is found it should be protected with a buffer zone if possible, or work in the area should be delayed until the nest has been evacuated. The setback distance of the buffer zone is dependent on the species found, and therefore consultation with a professional will be conducted. These actions shall be codified in an Avifauna Management Plan or will be included in the Environmental Protection Plan. To develop this plan the documents "Planning Ahead to Reduce Risks to Migratory Bird Nests" and "Avoidance Guidelines" found on the Environment Canada's website will be consulted. Planning will include processes to follow should an active nest be found at any time of the year.

Since a portion of the construction will be occurring during breeding season, it may be necessary to install commercially available bird deterrent systems to prevent birds from initiating nesting on structures, especially prior to the arrival of migratory birds in the spring. Commercially available bird deterrent systems such as wire grids and spike belts have proven effective for preventing nesting on roofs and ledges.

To reduce the likelihood of birds being injured by collision with structures, glass windows will be evaluated after construction to determine if they pose a risk to birds. Due to the design of the structures on site, it is not expected that the glass used will pose a significant risk to birds. If, after construction, it is determined that the glass may cause issues, one or more of the following mitigation measures can be taken:

- Installation of interior window coverings such as blinds or curtains;
- Use of frosted glass, or other non-transparent materials instead of transparent or highly reflective glass;

- High-quality adhesive tape which is 2 cm wide could be applied to the windows vertically, spaced a maximum of 10 cm apart. The tape would be applied on the outside of the window whenever possible.

During both construction and operation periods it is possible that birds may be trapped in pipes, grates, etc. Pipes, especially vertical pipes, will always be capped, when possible, or covered with netting to prevent birds or other animals from entering. If any grates are installed, the openings will be narrow enough to prevent most birds from entering and being trapped

**Item 17: Section 6.4,** replace with the following:

Appropriate waste management will be implemented during all phases of the project, including establishing a waste disposal system to handle the waste stream from the facility in accordance with the Provincial requirements of the Department of Environment and the requirements of the Town of Fermeuse. During construction a solid waste management plan will be developed to divert as much material away from landfill sites as possible.

All waste material will be considered, prior to disposal, for reuse, resale or recycling.

Waste materials not reused, resold or recycled, will be disposed at an approved waste disposal site, provided the owner/operator is willing to accept such waste and the local Service Newfoundland and Labrador (SNL) has agreed with the disposal of the waste materials at the site.

FEL acknowledges the need to implement a Waste Management Plan which includes, but will not be limited to, the following information:

- Description of the handling of waste dangerous goods/hazardous waste (WDG/HW) at the project;
- Identification of waste materials and information regarding the handling, storage, transport, treatment and disposal of waste materials associated with the project;
- Contingency plan;
- Site plan indicating the storage of WDG/HW containers and proximity to other buildings; and
- Training programs for employees such as WHMIS and transportation and handling of dangerous goods and hazardous waste.

This information will be provided during the permitting of the Project. A Waste Management Plan will be included in the Environmental Protection Plan.

**Item 18: Section 6.5,** replace with the following:

Blasting will be required when bedrock is encountered at the site property during site preparation. The handling and transport of explosives will be conducted in accordance with the Explosives Act (Canada), the Fire Prevention Act, 1991, and the Dangerous Goods Transportation Act.

All reasonable precautions will be taken to ensure that all people and property at or near the site are protected from flying material, air blast, ground vibration and/or fumes caused by the blast. If there is a perceived danger to people or property due to blasting, a blasting mat of adequate size and strength will be used to help reduce the risk.

There are two surface water supplies within one (1) kilometer radius of blasting operations. Located approximately one (1) kilometer from the project site is Merrymeeting Pond. This supply has a protected intake. There is one public well located on the North Side of Fermeuse Harbour at Port Kirwan, approximately 900 metres from the project site. Due to the distance from the blasting activities, and the topography of the area, contamination or disruption of these water bodies or water wells are not expected.

Rock piles caused by blasting activities will be removed from the site and properly disposed of as soon as reasonably possible to prevent contamination of surface water or groundwater caused by runoff.

The project will avoid using explosives in or near water wherever possible. Use of explosives in or near water produces shock waves that can damage a fish swim bladder and rupture internal organs. Blasting vibrations may also kill or damage fish eggs or larvae.

If explosives are required as part of a project in or near the water the potential for impacts to fish and fish habitat will be minimized by adhering to "Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters" (Wright and Hopky, 1998) and mitigation measures provided therein where applicable.

**Item 19: Section 6.6,** replace with the following:

The construction and/or upgrading of roads has the potential to cause negative environmental effects, including:

- Erosion, mass wasting, and sedimentation
- Disturbance to existing drainage systems

- Loss of habitat

Erosion, mass wasting, and sedimentation will be minimized by implementing silt and sedimentation fencing, where there is a risk of sedimentation, avoiding driving vehicles on uncovered/exposed soil when possible, and re-vegetating or covering exposed soils as soon as possible during the construction period. All roads created or upgraded will be adequately sloped to provide drainage and prevent the accumulation of water. A plan outlining the drainage of surface water will be developed by the owner and contractor during the early stages of Phase 1 construction. Potential habitat loss due to the construction of new access roads will be minimal due to the small areas that the roads will occupy. FEL is committed to ensuring that a proactive approach rather than a reactive approach is taken with regards to sedimentation and erosion control.

**Item 20 Section 6.9**, Table 5, Table of contents for the Environmental Protection Plan, replace with the following:



<u>TABLE OF CONTENTS</u>	
<b>1.0 INTRODUCTION</b>	
1.1. Purpose of the EPP	
1.2. Organization of the EPP	
1.3. Environmental Orientation	
1.4. Description of Activities	
1.5. Policies	
<b>2.0 ENVIRONMENTAL PROTECTION PROCEDURES</b>	
2.1 Introduction	
2.2 Vegetation Clearing	
2.3 Fuel Storage	
2.4 Sewage Disposal	
2.5 Solid Waste Disposal	
2.6 Surveying & Right-Of-Way Clearing	
2.7 Equipment Movement	
2.8 Steam Crossing	
2.9 Excavation, Backfill and Grading	
2.10 Drilling	
2.11 Pumps and Generators	
2.12 Noise	
2.13 Abandonment of Work Site	
2.14 Vessel Operations	
2.15 Sedimentation and Erosion Controls	
<b>3.0 CONTINGENCY PLANS</b>	
3.1. Introduction	
3.2. Fuel Hazardous Material Spills	
3.3. Wildlife Encounters	
3.4. Historic Resources	
3.5. Forest Fires	
<b>4.0 CONTACT LIST</b>	

**Item 21: Section 6.11,** replace with the following:

The largest area of concern for marine pollutants is in the area of the existing DFO wharf located near the existing fish plant. Any disturbance of this sediment may cause marine pollutants to become re-suspended. For this reason, the water lot will be carefully backfilled with suitable material to encapsulate the sediment, and therefore pollutants, preventing dispersion into the harbour. The area of concern will become reclaimed land and used as general laydown area until Phase 4 when berthing space will be developed in the area.

Activities such as pile driving and construction of berths may also cause a temporary release or re-suspension of sediments and/or contaminants. Fish habitat surveys have been conducted within marine environment of the project footprint which indicate minimal fish and fish habitat within the backfill and pile driving areas.

To further minimize re-suspension of marine pollutants, construction activities will be conducted onshore whenever possible.

The project will avoid using explosives in or near water wherever possible. Use of explosives in or near water produces shock waves that can damage a fish swim bladder and rupture internal organs. Blasting vibrations may also kill or damage fish eggs or larvae.

If explosives are required as part of a project in or near the water the potential for impacts to fish and fish habitat will be minimized by adhering to “Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters” (Wright and Hopky, 1998) and mitigation measures provided therein where applicable.

**Item 22: Section 9, Table 7, Potentially Applicable Provincial and Municipal Authorizations**

replace with the following:

Government Agency	Permit, Authorization, Approval	Activity Requiring Compliance
<b>Department of Environment and Conservation</b>		
Environmental Assessment Division	Release from Environmental Assessment	General
Water Resources Division	Alteration to a Body of Water (Schedule A to H). This application form is required as well as the appropriate Schedule application form (see below).	Any activity in or near any body of water  Marine Infilling
Water Resources Division	Schedule H - Environmental Approval of Other Alterations	Other works within 15 meters of a Body of Water.
Water Resources Division	Certificate of Approval for Site Drainage	Water run-off from the project site.
	Environmental Protection Plan (EPP) – Construction	General
<b>Department of Natural Resources</b>		
Mines and Energy Branch	Magazine Licence	
Mines and Energy Branch	Explosives Transportation Permit	
Mines and Energy Branch	Quarry Permit	
<b>Department of Government Services</b>		
Municipal and Intergovernmental Affairs	License to Occupy Crown Land	
Government Services	Certificate of Approval – Storage and Handling of Gasoline and associated products.	

<b>Government Agency</b>	<b>Permit, Authorization, Approval</b>	<b>Activity Requiring Compliance</b>
Government Services	Permit for Flammable and Combustible Liquid Storing and Dispensing (Above or Below Ground) and for Bulk Storage (above ground only)	
Government Services	Storage Tank System Application	All Storage Tanks on Site Including Waste Oil Tanks.
Government Services	Compliance Standards – National Fire Code, National Building Code and Life Safety Code	All Buildings on Site.
Government Services	Building Accessibility Exemption	All Building on Site
Government Services	Statutory Declaration for Registration of Boiler and Pressure Vessel Fittings Fabricated in Newfoundland and Labrador	
Government Services	Contractor's Licence – Pressure Piping System	
Government Services	Examination and Certification of Welders and Blazers	
Government Services	Examination and Certification of Propane System Installers	
<b>Department of Transportation and Works</b>		
Transportation and Works	Compliance Standard – Storing, handling and transporting dangerous goods	General
<b>Department of Human Resources Labour and Employment</b>		
Human Resources Labour and Employment	Compliance Standard – Occupational Health and Safety	Project-related employment
<b>Department of Business, Tourism, Culture and Rural Development</b>		
Department of Business, Tourism, Culture and Rural Development	Compliance Standard – Historic Resources Act	Construction and operation.
<b>Department of Human Resources, Labour and Employment</b>		
Human Resources, Labour and Employment	Occupational Health and Safety Manual	General
<b>Town of Fermeuse</b>		
Town of Fermeuse	Compliance Standard/ Development Plan	Project Construction and Operation



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