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# ENVIRONMENTAL PREVIEW REPORT ADDENDUM 2

FERMEUSE HARBOUR DEVELOPMENT PROJECT

Fermeuse Enterprises Limited



## INDUSTRY

08 | 11 | 2016

REPORT ADDENDUM 2  
Rev. C04 > Internal ref. 629647 > Volume 1/1  
629647-0001-T-4E-REP-000-0001\_C04

**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  
A1B 4J6

**Submitted by:**

Fermeuse Enterprises Limited  
P.O. Box 580,  
Harbour Grace, NL  
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November 8, 2016

The following Addendum is issued in response to the May 16, 2016 letter from the Minister of Environment and Conservation requesting additional amendment to the EPR Report submitted by Fermeuse Enterprises Limited on September 16, 2015.

## Addendum # 2

A site plan for each phase of development has been developed and is presented in Appendix C of the EPR. 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”.

**Item 1: Section 4.2.8 Water, Sewer and Electrical Services**, replace text with the following:

### I. Potable Water

The water needed by the Project will be supplied from Bear Cove Pond. The water will be transported, treated and stored on site through infrastructure that will be built, owned and operated by FEL. By constructing and operating infrastructure that is private, separate and independent from the Town of Fermeuse’s municipal water system, the project will avoid having any impacts of the Town water treatment and distribution infrastructure and operations and maintenance costs. The Town has been included in the planning of the project with regards to water and sewer, and they are aware of the planned approach. Both FEL and the Town are committed to structuring agreements which will ensure that the Town’s water supply is not compromised. It is understood that all costs associated with the private water system will be carried by FEL. The final FEL system design will be coordinated with the existing Town system to ensure the existing system components are not impacted by the work.

### Demand

The potable water demands on the Project Site will be from supplying ships being serviced at the Site with water and the servicing of buildings where office and shift workers will be working. Of these two, the demand for servicing ships will be by far more substantial. In order to attenuate peak demands, a combination of operational procedures and on site water storage will be used such that the required flows for berth filling will be constant throughout the day. At final build-out of the project the average daily demand for the site is expected to be 20.1 L/s (1,736 m<sup>3</sup>/d).

The assumptions used to calculate those demands are as follows:

- Approximately 275 employees working on shifts at the site.
- Approximately 50 office employees working 8 hour days in all administration buildings.
- The operations will allow for only two (2) berths to be filled every 24 hours.
- On Site water storage will be put in place to allow for a constant berth water demand of 17.5 L/s.
- The water treatment process will have a minimum water recovery rate of 90%

### **Water Supply**

At present, the Town of Fermeuse uses Merrymeeting Pond as its source of water, but the Town is currently involved in a three year project to upgrade the municipal water system which will change the water source to Bear Cove Pond. As mentioned above, Bear Cove Pond will also be the source for the Project Site water needs, though it will be collected, transported and treated independently from the Town's Water.

The watershed that feeds Merrymeeting Pond includes the area that feeds into Bear Cove Pond, with a total area of 3.8 km<sup>2</sup> (2016, DOEC). The reliable yield for this watershed is approximately 8,700 m<sup>3</sup>/d (101 L/s) as per the Regional Water Resource Study of the Eastern Avalon Peninsula (1989, DOEC).

The Bear Cove Pond watershed (excluding Merrymeeting Pond) has a slightly lower total area of 3.2 km<sup>2</sup>. The estimated yield is estimated at 7,326 m<sup>3</sup>/d (85 L/s). A linear scaling of the watershed yields based on watershed size was used to estimate the Bear Cove Pond watershed yield.

The total demand on the Bear Cove Pond water supply will be a combination of the Town of Fermeuse's domestic demand and the Project Site's demand. The Town's average daily domestic demand was estimated assuming a per capita water demand of 340 L/cap/d as per the *NL Guidelines for the Design, Construction and Operation of Water and Sewerage Systems* (2005, DOEC).

Town Population (2011 census)	Town Average Domestic Demand (m <sup>3</sup> /d)	Site Average Demand (m <sup>3</sup> /d)	Total Demand (m <sup>3</sup> /d)	Reliable Yield (m <sup>3</sup> /d)
323	110	1,736	1,846	7,326

The Bear Cove Pond watershed has ample yield to supply both the Town's domestic demands as well as the Project Site demands. This evaluation is supported by the fact that historically a former fish plant was in operation in the Town with water usage of approximately 2,700 m<sup>3</sup>/d (1989, DOEC) and there were no reported issues with supplying water to the fish plant.

## **Water Quality**

As mentioned above the water will be brought to, treated and stored on the Site through an independent water system that will be owned and operated by FEL. The water treatment system that will be put in place will treat the Bear Cove source water to a quality meeting the Canadian Drinking Water Quality Guidelines (CDWQG).

The on-site water treatment facility will include a combination of physico-chemical and/or physical treatment (i.e. coagulation and/or filtration and/or membranes), disinfection (UV and/or ozone and/or chlorination) and pH adjustment (as required) to ensure necessary contact times and/or log inactivation of pathogens are achieved. The on-site water storage system will be available to provide additional contact time should it be needed.

The treatment facility will also ensure that the treated potable water meets the CDWQG acceptable ranges and maximum limits for pH, colour and disinfection by-products (DBP's: halo acetic acids (HAA's) in particular) by limiting the conditions that are favorable for DBP formation, namely through the removal of DBP precursors (i.e. organic matter) which are also responsible for colour.

Chlorination will be included as part of the treatment process to maintain a free chlorine residual of 0.2 to 0.5 mg/L in the treated water.

The treatment system will be designed specifically for the Project Site water demands and the final technology selection will be carried out during the detailed design stage. Work associated with the onsite water storage and water treatment will be carried out in a staged approach with sufficient capacity being put in place at the beginning of each Project phase to assure the water quality and quantity criteria described above are met.

## **Other Water Infrastructure**

In addition to the onsite water treatment infrastructure, an intake structure at Bear Cove Pond, a water line from Bear Cove Pond to the Site as well as any required pumping to supply the Project Site with water will be put in place by FEL. Consideration will be given to the protecting of the water supply both during the detailed design and construction phases of the intake infrastructure in order to minimize the impacts to the residents being serviced from the Town infrastructure during the construction of the FEL intake.

The waterline will be located wherever possible beside the water line that will be constructed as part of the Town or Fermeuse's water system upgrades. By "twinning" the lines and coordinating construction efforts wherever possible, there may be opportunities for cost savings for FEL and the Town of Fermeuse. Twinning the water lines will also help avoid potential disruptions to the Fermeuse water system during construction of the dedicated Project Site water supply line by minimizing any crossings between the Town infrastructure and the Project Site dedicated infrastructure. In order to distinguish

between the Town's waterline and FEL's waterline, detailed as-built information will be collected and crossings will be avoided such that the relative position of the infrastructure is consistent (e.g. the eastern most pipe will always be the FEL pipe). In addition, consideration will be given to using different pipe materials and/or different marker tape and/or electronic ball markers balls during the detailed design as needed.

Again all Project Site dedicated infrastructure will be designed and sized to accommodate the Site water demand requirements. All work associated with this infrastructure will be put in place at the beginning of Phase I of the project.

## II. Wastewater

The estimated wastewater produced from the fully developed project site is 5.76 litres per second (L/s)

The assumptions used to calculate those demands are as follows:

- 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" (2005, DOEC).
- Estimated sewage flows for 8 hour employees based "Wastewater Engineering" (2003, Metcalf and Eddy).
- Infiltration rates based on DOEC guidelines (2005, DOEC).
- Peaking factors from DOEC guidelines (2005, DOEC).

There are no immediate plans by the Town of Fermeuse to upgrade sewage infrastructure.

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 its 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 selected, 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 will 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.

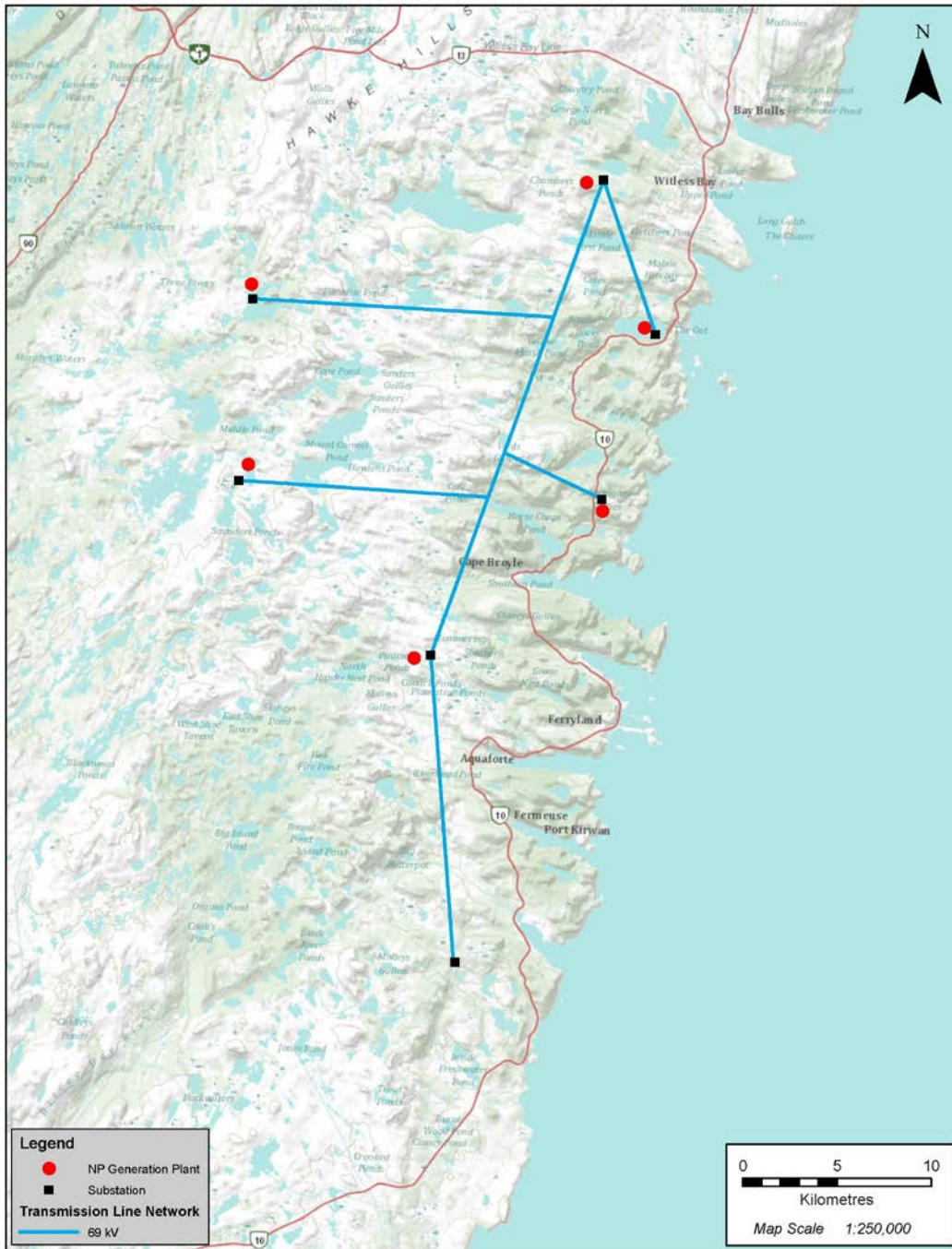


Figure 12: Transmission line network along Southern Shore Highway



**Item 2: Section 4.3.3.2 Potable Water for Marine Vessels**, replace text with the following:

Water supplied to offshore structures and supply vessels must meet the Canadian Drinking Water Quality Guidelines (CDWQGs). As mentioned above the potable water for marine vessels will be transported, treated and stored on site through infrastructure that will be built, owned and operated by FEL. The on-site water treatment facility will include a combination of physico-chemical and/or physical treatment (i.e. coagulation and/or filtration and/or membranes), disinfection (UV and/or ozone and/or chlorination) and pH adjustment (as required) to ensure necessary contact times and/or log inactivation of pathogens are achieved. The treatment facility will also ensure that the treated potable water meets the CDWQG acceptable ranges and maximum limits for pH, colour and disinfection by-products (DBP's: halo acetic acids (HAA's) in particular) by limiting the conditions that are favorable for DBP formation, namely through the removal of DBP precursors (i.e. organic matter) which are also typically responsible for colour.

As part of the treatment process, chlorine will be used to maintain a free chlorine residual of 0.2 to 0.5 mg/L. A minimum free chlorine level of 0.2 mg/L ensures a sufficient amount of residual is present to prevent the water from being recontaminated during storage and transportation. Chlorine levels will be tested daily to ensure free chlorine does not drop below the prescribed level. In addition to the daily chlorine measurements, microbial and chemical sampling will be performed at the required frequency to ensure the treated water meets the CDWQGs. An annual inspection of potable water tanks and associated equipment will be conducted to check for coating breakdown, damage, rust, deposits or organic growth. All findings from water quality testing or tank inspections will be recorded and remedial actions will be taken when needed. A regular turn-over of water in the water storage tanks will be enforced to prevent stagnation.

Before connecting the fill station to a vessel's fill hose, hoses will be inspected and then flushed for a minimum of five minutes to prevent standing water from entering the Site's potable water system. All hoses used for potable water will not be used for any other purpose and will be drained and kept capped when not in use. All pipes and hoses will be regularly disinfected with a chlorine solution for one hour and then flushed with water for 5 minutes prior to use. If pipes or hoses are found uncapped they will be disinfected before use. Backflow prevention valves will be installed on the filling lines to protect the Site water quality. Metering of the berth filling may be carried out at the same location/facility.

**Item 3: Section 5 Alternatives**, replace paragraph # 6 with the following:

The abundant water supply of freshwater is critically important for a project of this nature, and it is noteworthy that the proposed water source Bear Cove Pond is in the proximity of the project Site location and has abundant yield to supply both the Town of Fermeuse as well as the project Site demands. As the project site will be serviced through a private dedicated system, there will be no disruption, stress or inconvenience placed upon existing municipal infrastructure. While readily available freshwater is an obvious requirement, it is not clear that all potential harbor locations in the region would have abundant supply available that could meet CDWQGs.

**Item 4: Section 9, Table 7, Potentially Applicable Provincial and Municipal Authorizations**

replace with the following:

<b>Government Agency</b>	<b>Permit, Authorization, Approval</b>	<b>Activity Requiring Compliance</b>
<b>Department of Environment and Conservation</b>		
Environmental Assessment Division	Release from Environmental Assessment	General
Water Resources Division	Permit for Development Activity in Protected Public Supply Area	Piping, intake and pump house construction near Bear Cove Pond
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.
Water Resources Division	Section 36 – Permit to Construct Wastewater Infrastructure	Extension/Rerouting of Town’s Existing Sewer Outfall in Phase 2 of the Project.  If it is Agreed On-Site Wastewater Treatment System will be Public and Shared Between the Proponent and the Town, Approval from ECC is Required
	Environmental Protection Plan (EPP) – Construction	General
<b>Department of Natural Resources</b>		
Mines and Energy Branch	Magazine License	
Mines and Energy Branch	Explosives Transportation Permit	
Mines and Energy Branch	Quarry Permit	
<b>Service NL</b>		

<b>Government Agency</b>	<b>Permit, Authorization, Approval</b>	<b>Activity Requiring Compliance</b>
Municipal and Intergovernmental Affairs	License to Occupy Crown Land	
Service NL	Permit for Approval of Waterworks Under Section 37 of Water Resources Act.	Development of Private Water Source
Service NL	Permit for Approval of Sewage Works Under Section 36 of Water Resources Act.	Development of Private On-Site Wastewater Treatment System – in case where Wastewater Treatment System is not shared with Town
Service NL	Water Supply Testing	Development of Private Water Source
Service NL	Certificate of Approval – Storage and Handling of Gasoline and associated products.	Fuel Storage and handling.
Service NL	Permit for Flammable and Combustible Liquid Storing and Dispensing (Above or Below Ground) and for Bulk Storage (above ground only)	Fuel Storage and dispensing.
Service NL	Storage Tank System Application	All Storage Tanks on Site Including Waste Oil Tanks.
Service NL	Compliance Standards – National Fire Code, National Building Code and Life Safety Code	All Buildings on Site.
Service NL	Building Accessibility Exemption	All Building on Site
Service NL	Statutory Declaration for Registration of Boiler and Pressure Vessel Fittings Fabricated in Newfoundland and Labrador	
Service NL	Contractor's License – Pressure Piping System	
Service NL	Examination and Certification of Welders and Blazers	
Service NL	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>		

Government Agency	Permit, Authorization, Approval	Activity Requiring Compliance
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

**Item 5: Add new Section 10 References,**

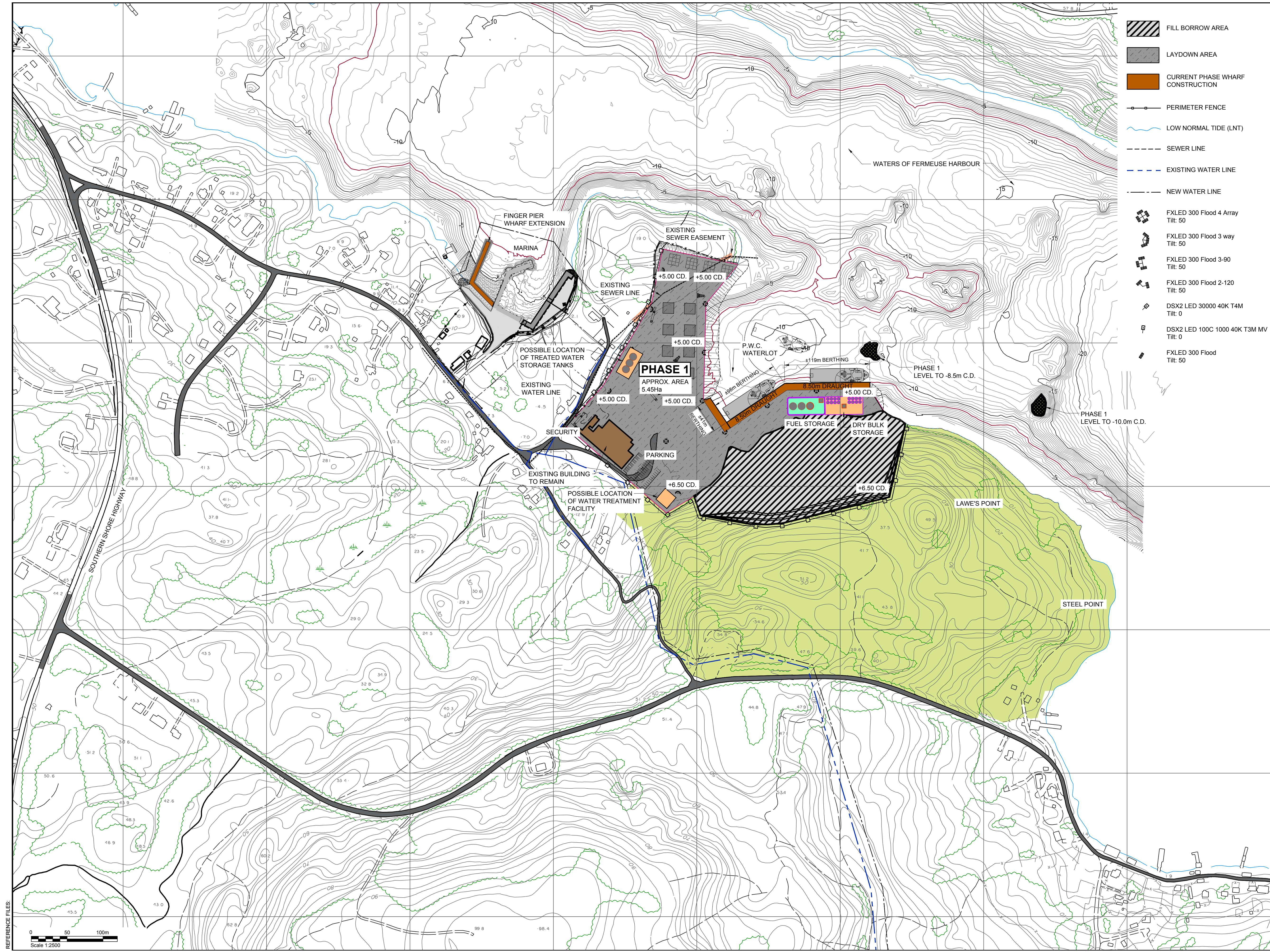
2016, NL Department of Environment and Conservation (DOEC), Water Resources Management Division, Water Resources Portal, Open Water Resources Map Viewer, Fermeuse Watershed, <https://maps.gov.nl.ca/water/mapbrowser/Default.aspx>

2005, NL Department of Environment and Conservation (DOEC), Water Resources Management Division, *Guidelines for the Design, Construction and Operation of Water and Sewerage Systems*

1989, NL Department of Environment and Conservation (DOEC), *Water Resources Management Division, Regional Water Resources Study of the Eastern Avalon Peninsula*

2003, Metcalf and Eddy, McGraw-Hill, *Wastewater Engineering, Treatment and Reuse*, Fourth Edition

**Item 6: Replace drawings in Appendix C with the attached drawings.**



- FILL BORROW AREA
- LAYDOWN AREA
- CURRENT PHASE WHARF CONSTRUCTION
- PERIMETER FENCE
- LOW NORMAL TIDE (LNT)
- SEWER LINE
- EXISTING WATER LINE
- NEW WATER LINE
- FXLED 300 Flood 4 Array  
Tilt: 50
- FXLED 300 Flood 3 way  
Tilt: 50
- FXLED 300 Flood 3-90  
Tilt: 50
- FXLED 300 Flood 2-120  
Tilt: 50
- DSX2 LED 30000 40K T4M  
Tilt: 0
- DSX2 LED 100C 1000 40K T3M MV  
Tilt: 0
- FXLED 300 Flood  
Tilt: 50

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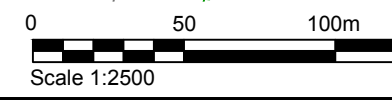
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**PERMEUSE HARBOUR DEVELOPMENT**

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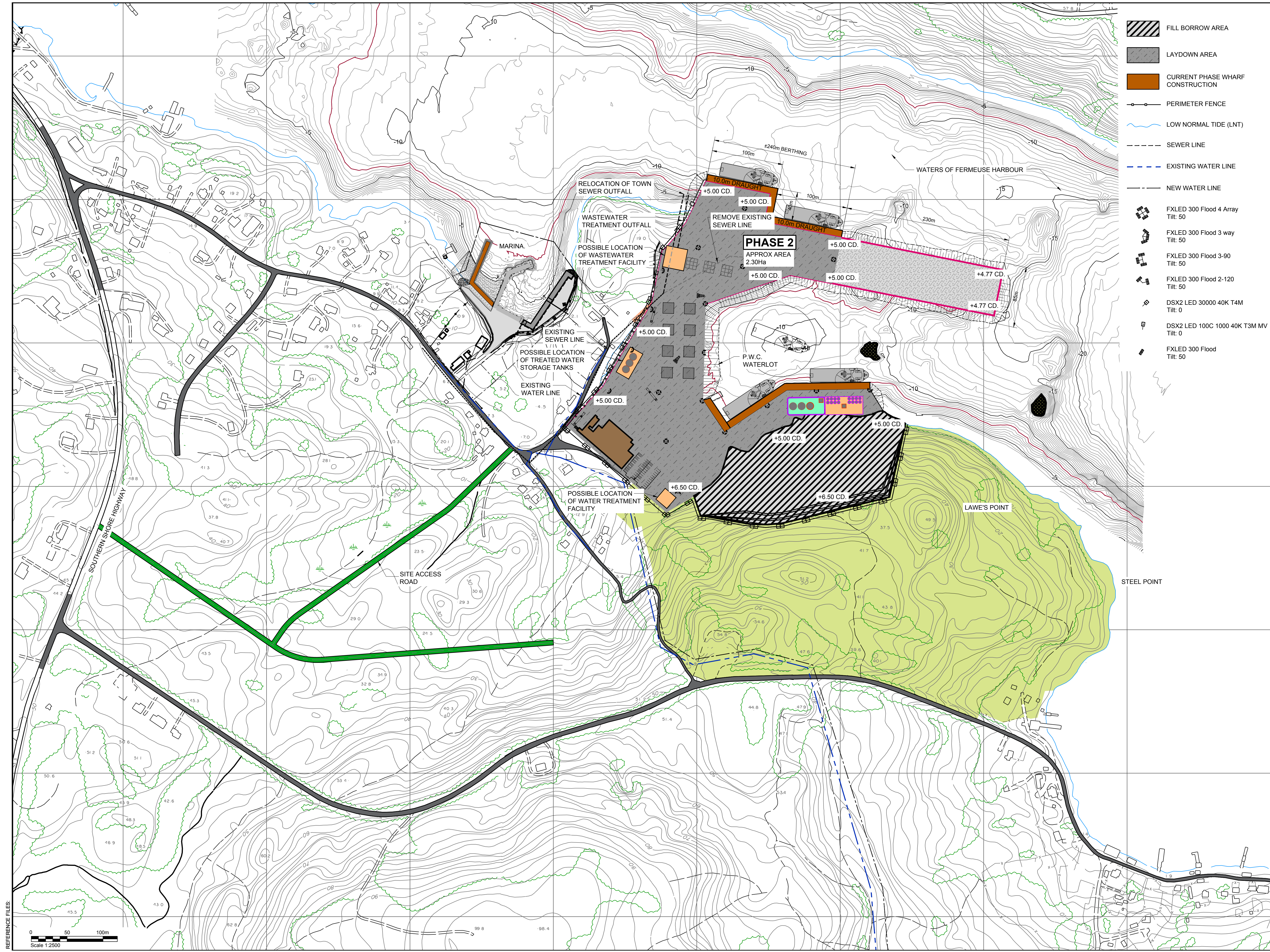
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DRAWING No. **DW1- 01 - MA- 01 - 001**      REV. **C01**

REFERENCE FILES:



629647-0001-D-4P-DWG-000-0001-01



- FILL BORROW AREA
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PROJECT  
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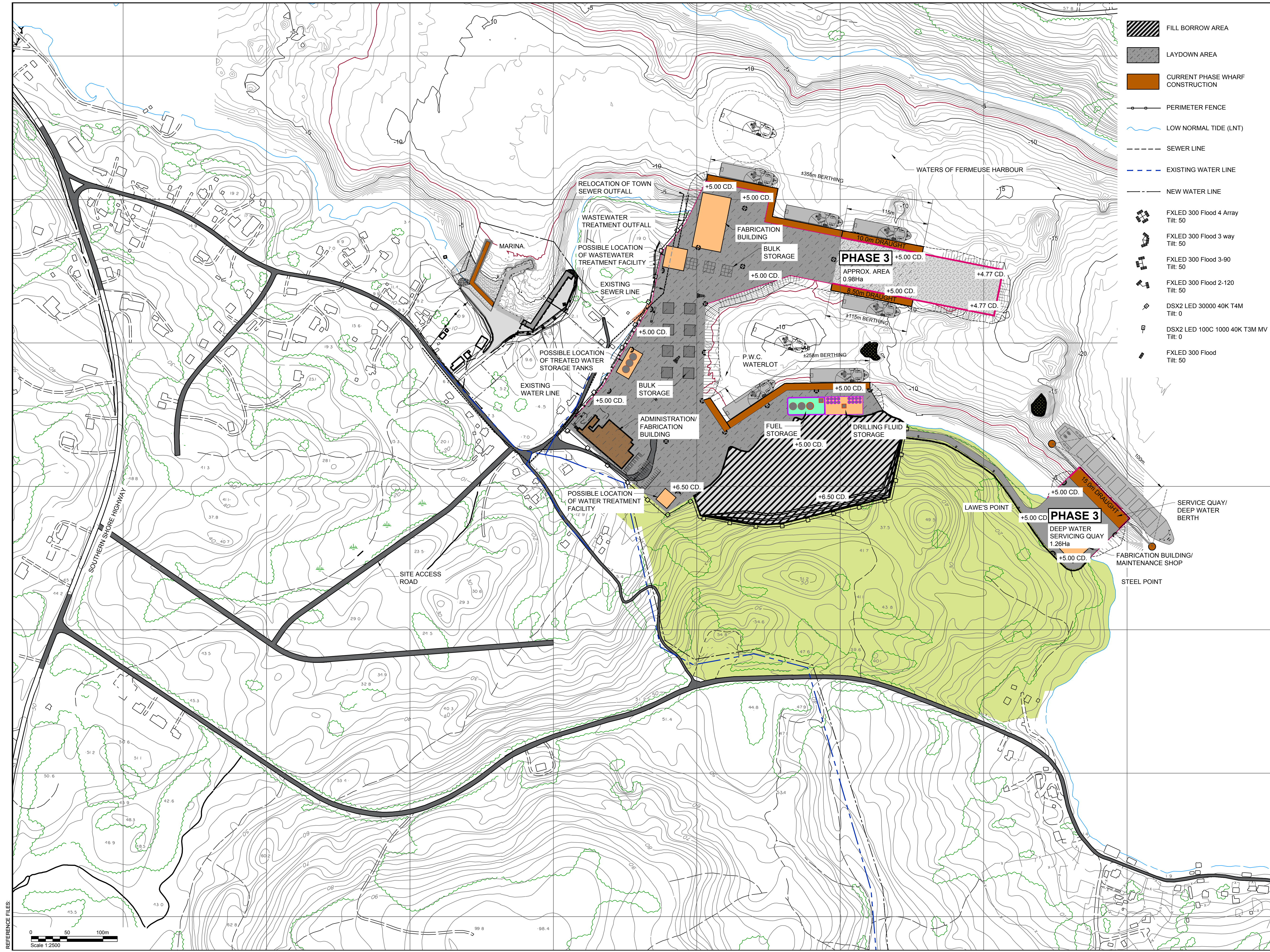
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DW1- 01 - MA- 01 - 002      REV. C01

REFERENCE FILES:

629647-0001-D-4P-DWG-000-0002-01



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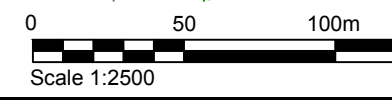
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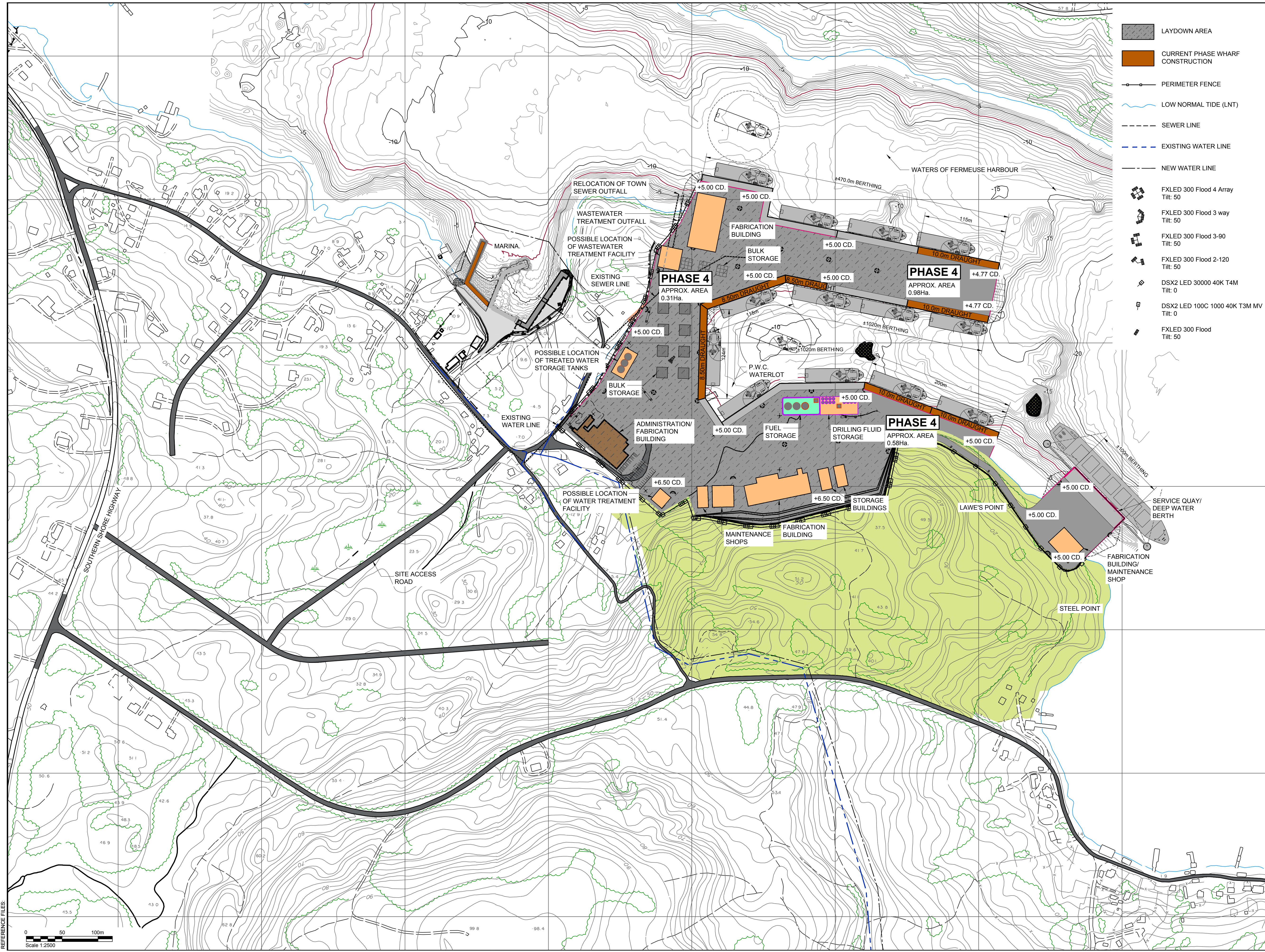
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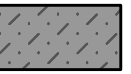

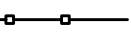

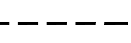

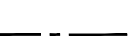
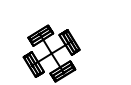






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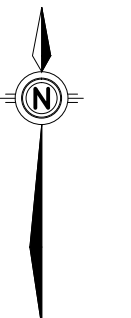
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**FERMEUSE ENTERPRISES LIMITED**

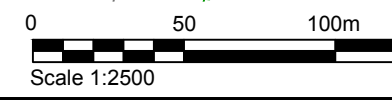
PROJECT  
**PERMEUSE HARBOUR DEVELOPMENT**

TITLE  
**SITE DEVELOPMENT PLAN PHASE 4**

DESIGNED BY	P.F.	CHECKED BY	DATE	15/07/31
DRAWN BY	J.V.	APPROVED BY	DATE	15/07/31
SCALE	AS SHOWN	SNC LAVALIN PROJ. No.	629647	
		CLIENT PROJ. No.		

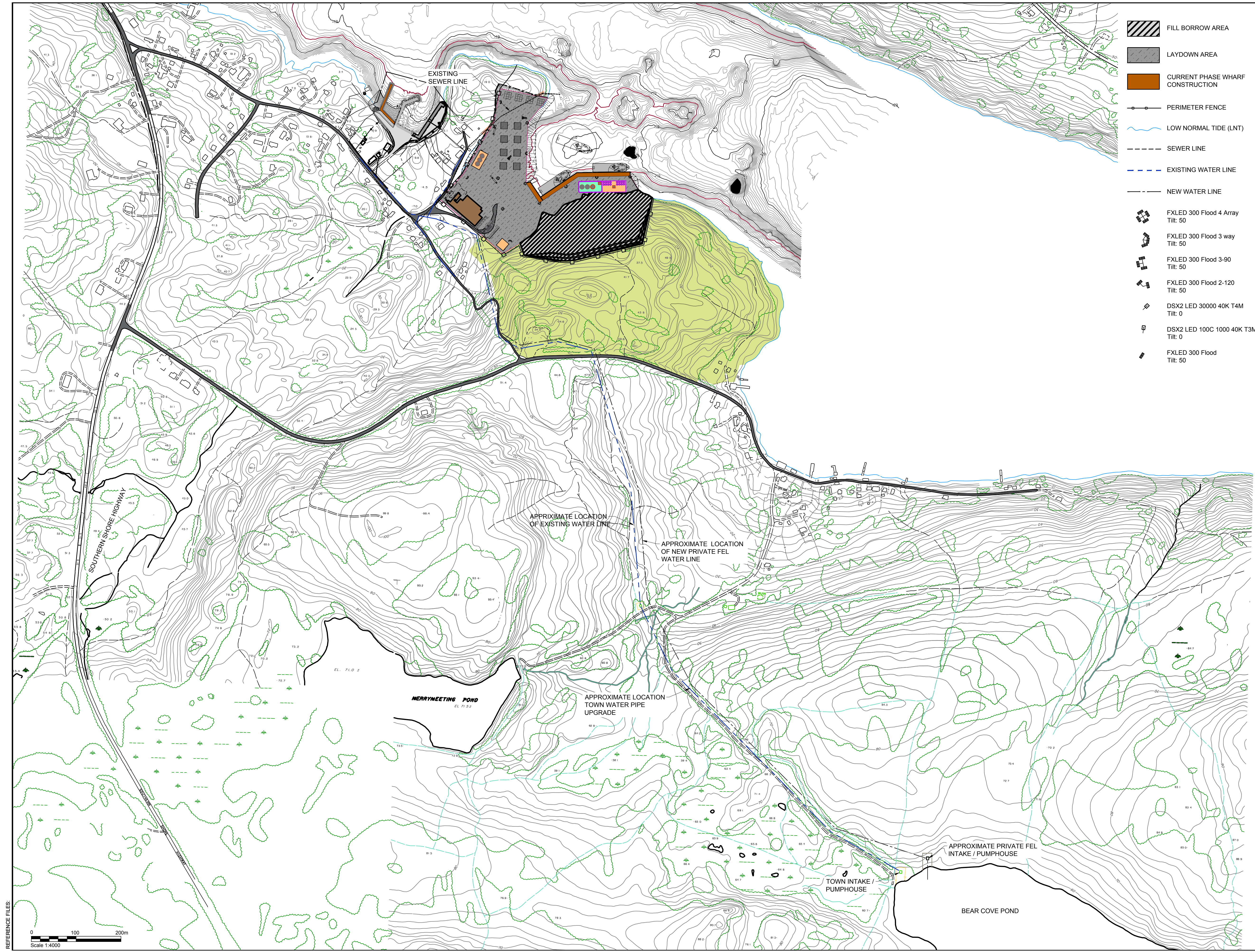
DRAWING No. **DW1-01-MA-01-004** REV. **C01**

REFERENCE FILES:



629647-0001-D-4P-DWG-000-0004-01





CONTRACTOR MUST VERIFY ALL DIMENSIONS AND CONDITIONS ON SITE BEFORE PROCEEDING WITH ANY PORTION OF THIS WORK. REPRODUCTIONS OF THIS DRAWING MAY HAVE BEEN REDUCED OR ENLARGED. REFER TO GRAPHIC SCALE. DO NOT SCALE DRAWINGS FOR CONSTRUCTION.

- FILL BORROW AREA
- LAYDOWN AREA
- CURRENT PHASE WHARF CONSTRUCTION
- PERIMETER FENCE
- LOW NORMAL TIDE (LNT)
- SEWER LINE
- EXISTING WATER LINE
- NEW WATER LINE
- FXLED 300 Flood 4 Array  
Tilt: 50
- FXLED 300 Flood 3 way  
Tilt: 50
- FXLED 300 Flood 3-90  
Tilt: 50
- FXLED 300 Flood 2-120  
Tilt: 50
- DSX2 LED 30000 40K T4M  
Tilt: 0
- DSX2 LED 100C 1000 40K T3M MV  
Tilt: 0
- FXLED 300 Flood  
Tilt: 50

**INFORMATION ONLY**  
**NOT FOR CONSTRUCTION**

REV.	ISSUED FOR ADDENDUM #2	CHECKED BY	APP. BY	DATE
				2018/11/08
NORTH		PROFESSIONAL STAMP		

PERMIT HOLDER STAMP

**SNC • LAVALIN**  
1133 TOPSAIL RD., MOUNT PEARL, NL, A1N 5G2  
TEL: (709) 368-0118      FAX: (709) 368-3541

CLIENT  
**FERMEUSE ENTERPRISES LIMITED**

PROJECT  
**PERMEUSE HARBOUR DEVELOPMENT**

TITLE  
**SITE DEVELOPMENT PLAN  
PROPOSED NEW WATER LINE  
(PHASE 1)**

DESIGNED BY	P.F.	CHECKED BY	DATE
DRAWN BY	J.V.	APPROVED BY	DATE
SCALE	AS SHOWN	SNC LAVALIN PROJ. No.	629647
		CLIENT PROJ. No.	

DRAWING No. **DW1- 01 - MA- 01 - 005**      REV. **C01**

REFERENCE FILES:

629647-0001-D-4P-DWG-000-0005-01



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