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Marine Traffic Information
Requirement Report

MARINE TRAFFIC INFORMATION REQUIREMENTS REPORT – FRASER SURREY DOCKS

February 2018

BHP Billiton Potash Export Facility at Fraser Surrey Docks

Contents

ACRONYMS, ABBREVIATIONS, SYMBOLS, AND UNITS OF MEASURE

Acronym, Abbreviation	Definition
AIS	automatic identification system
BC	British Columbia
FSD	Fraser Surrey Docks
Project	proposed potash export facility
VFPA	Vancouver Fraser Port Authority
VTS	Vessel Traffic Services

Symbol, Unit of Measure	
%	percent
m	metre

1 Introduction

This management plan has been developed to identify the marine traffic information requirements for the proposed potash export facility (Project) at Fraser Surrey Docks (FSD), located on the south bank of the Fraser River, in Surrey, British Columbia (BC). This plan includes confirmation of the range of design vessels and descriptions of vessel sizes that will be used to transport potash, and provides information on the anticipated traffic levels, anchorage requirements, and utilisation periods. An operational plan for berthing and unberthing is also included in this plan, as well as pilotage details and guidance on tug assistance during vessel berthing and unberthing. In addition, this plan provides direction on mooring and unmooring operations, as well as anticipated warping and bunkering activities.

Traffic Control Zone 4 (TCZ-4) includes the Fraser River. BHP is aware that TCZ-4 is due to be adopted in the near future, which provides updated guidance on marine vessel traffic control practices and procedures for the Fraser River. Once operational, all marine traffic generated by the proposed Project will adhere to the guidelines in effect at that time.

2 Confirmation of Design Vessel Range

2.1 Vessel Sizes

The vessel sizes are shown in **Table 1**.

Table 1: Vessel Sizes

Vessel Type/ Class	Max capacity (DWT)	Fraser River max capacity (DWT)[a]	Beam (m)	Length LOA (m)	Draft Fully Laden (m)	Laden Draft (m)	Potash Load Capacity (t)
Handysize	19,000	19,000	24.6	170	9.67	9.67	19,000
Handymax	33,250	33,250	28	188	11.44	11.44	33,250
Supramax	53,200	51,850	32.3	200	11.75	11.50	51,853
Ultramax	60,800	50,180	32.3	200	13.27	11.50	50,186
Panamax	70,000	51,620	32.3	215	12.8	11.50	51,617
Kamsarmax	82,188	54,430	32.3	229	14.98	11.50	54,437

Notes: DWT - deadweight tonnage; LOA - length overall; m - metres; t - tonnes

[a] The DWT (deadweight tonnage) provided for each ship size reflects the light loaded maximum capacity required to navigate the Fraser River, limited by an 11.5 m draft.

3 Anticipated Vessel Traffic Levels

Types of Vessels: Handysize, Handymax, Supramax, Ultramax, Panamax, Kamsarmax.

The frequency of each type of vessel will be dependant on market conditions and availability of vessels. At this time the anticipated range of vessel calls is as follows:

- Handysize & Handymax: up to 20%
- Supramax, Ultramax, Panamax: up to 75 %
- Kamsarmax up to 35%

4 Anticipated Anchorage Requirements and Utilization Periods

The anticipated number of vessels in anchorage 99 (%) of the time will be three or less, but the maximum number of Jansen vessels in the anchorage will be six due to weather conditions delaying loading operations. Approximately 38% of the time, some vessels will proceed directly to FSD Berth 9 to load. The average anchorage stay is 22 hours (which includes ships that proceed directly to berth). The maximum vessel stay at anchorage is anticipated to be 10 days (or 230 hours) based on weather related conditions.

5 Operational Plan – Berthing / Unberthing

5.1 Pilotage – General Requirements

Pilotage is compulsory for all vessels arriving in Canadian waters and at the terminal. The Pacific Pilotage Authority has the principal mandate to provide safe, reliable, and efficient marine pilotage and related services in the coastal waters of BC including the Fraser River. Coastal pilotage is provided by the BC Coast Pilots, and river pilotage is provided by the Fraser River Pilots. The ship's agent is responsible for arranging and scheduling pilots and tug services.

For vessel transit to the Project, the current operational controls will be in place:

- All vessels will carry pilots throughout the transit of the Fraser River to the Project and FSD.
- Tugs will carry experienced operator's familiar with the Fraser River and operations.
- There are currently no speed restrictions applied on the Fraser River, and the river is open for two-way traffic at all times.
- Tug and barge traffic will transit at average 6.3 knots speed over ground.
- A surveillance-based Vessel Traffic Service (VTS), using automatic identification system (AIS) or primary radar currently applies throughout the Fraser River.
- In general, there is excellent communication between vessel traffic in the river, tug masters, VTS, and facilities; in addition, all tugs in the river are AIS-equipped.

5.2 Tug Assistance for Berthing and Unberthing

Berthing and unberthing operations will be carried out with tug assistance. Berthing and unberthing, for the design size vessels and smaller, will be carried out with a minimum of two Azimuth Stern Drive-assist tugs each with a minimum bollard pull of 65 tonnes. The ship's owner, operator, or charterer will be responsible for the cost of hiring tug services.

Tug assistance for visiting vessels will be arranged by the ship's agent. The ship's agent will be aware of the Vancouver Fraser Port Authority (VFPA) tug assist requirements and stand-by duties.

5.3 Berthing Operations

Subject to tides and environmental conditions, berthing and unberthing operations will be carried out on a 24-hour basis by day and night. Under normal ballasted operating conditions, the vessel may, at the pilot's discretion, expect to transit the river and berth on arrival, and may depart shortly following completion of loading.

Berth 9 is designed to accept vessels either port or starboard side alongside at the pilot's discretion depending on wind and/or current conditions. The pilot's preference, because of the prevailing river ebb current, is to berth vessels starboard side alongside while stemming the current; however, should conditions dictate, the arriving vessel will be turned in the river to be berthed port side alongside.

On berthing, the vessel will be brought to a stop approximately one beam width off and parallel to the berth, and will be landed with the assistance of tugs on all berthing fenders simultaneously.

FSD's Standard Operations also ensure 20-metre (m) spacing between vessels alongside.

Vessel passing requirements are coordinated by Fraser River Pilots/Ship's Master, and will be monitored by Canadian Coast Guard Vessel Traffic Service and VFPA Marine Operations. Safe speed as defined by International Regulations for Preventing Collisions at Sea, 1972, Rule No. 6 and controlled by the Fraser River pilot on-board vessel.

5.3.1 Berthing / Unberthing Limits

For berthing and unberthing, in all cases the Fraser River Pilot's discretion will apply, and pilots will consider the weather, sea conditions, predicted current, freshet, draft, maneuvering characteristics, fender capacity of the berth, space available, and mechanical history of the vessel. Pilots generally follow the limits presented in **Table 2**;

Table 2: Berthing and Unberthing Limits

Parameter	Limit
Wind Speed – Light Condition	Over 25 knots
Wind Speed – Laden Condition	Over 30 knots
Visibility	Near zero
Seismic Activity	Forecast or earthquake warning has been issued

5.4 Mooring Operations

Mooring operations will be carried out with the assistance of a trained private mooring team on the jetty. All mooring operations will consider relevant provisions of local legislation, as amended, and will apply them during each mooring operation.

The mooring team will handle the ship's fore and aft mooring lines in accordance with the pilot's instructions and the agreed-upon with the FSD operations team.

The mooring team on the jetty will be equipped with and will wear proper personal protective equipment and lifejackets.

5.5 Unmooring

The ship's agent will ensure that a licensed pilot and assist tugs have been ordered and scheduled for the vessel's departure. Unmooring line handling operations will be carried out by the trained mooring gang under the direction of the terminal's operator on the jetty.

5.6 Warping

No warping of vessels for potash loading at FSD Berth 9 will be required.

5.7 Bunkering

All vessels bunkering at the terminal will adhere to the Bunkering Practices and Procedures as stipulated in the VFPA's Harbour Operations Manual (PMV 2010). Vessel bunkering will take place primarily in Vancouver Harbour, either at designated anchorages or at berth. If vessel bunkering is required at the Project site in the Fraser River, bunkering will only occur alongside the vessel while at berth. A stand-by tug will be in attendance of bunker barges moored alongside or otherwise at FSD. If a towing company is used, it will be the responsibility of the bunkering agent to ensure the towing company is aware of the bunkering and berthing schedule at FSD. When bunkering operations are under way, tug masters will be required to maintain communication with Victoria Traffic on VHF Channel 74 to monitor for deep-sea traffic that may affect bunkering operations, and advise when bunkering operations begin and end. In the event a ship must transit past a berth within the same breakwater where a bunkering operation is underway, the barge will be removed to allow for the safe and timely transit of arriving, shifting, or departing vessels. All bunkering operations will be carried out in accordance with the latest edition of International Safety Guide for Oil Tankers and Terminals (ICSOC 2006) and the additional information provided in these practices and procedures.

6 References

International Chamber of Shipping Oil Companies (ICSOC). 2006. International Safety Guide for Oil Tankers and Terminals. 5th edition. ISBN 10: 1856092917. ISBN 13: 9781856092913.

Port Metro Vancouver (PMV). 2010. Harbour Operations Manual. Vancouver Fraser Port Authority. Updated June 2010. Available at http://pct.ca/wp-content/uploads/2014/12/Harbour_Operations_Manual.pdf. Accessed August 2017.