



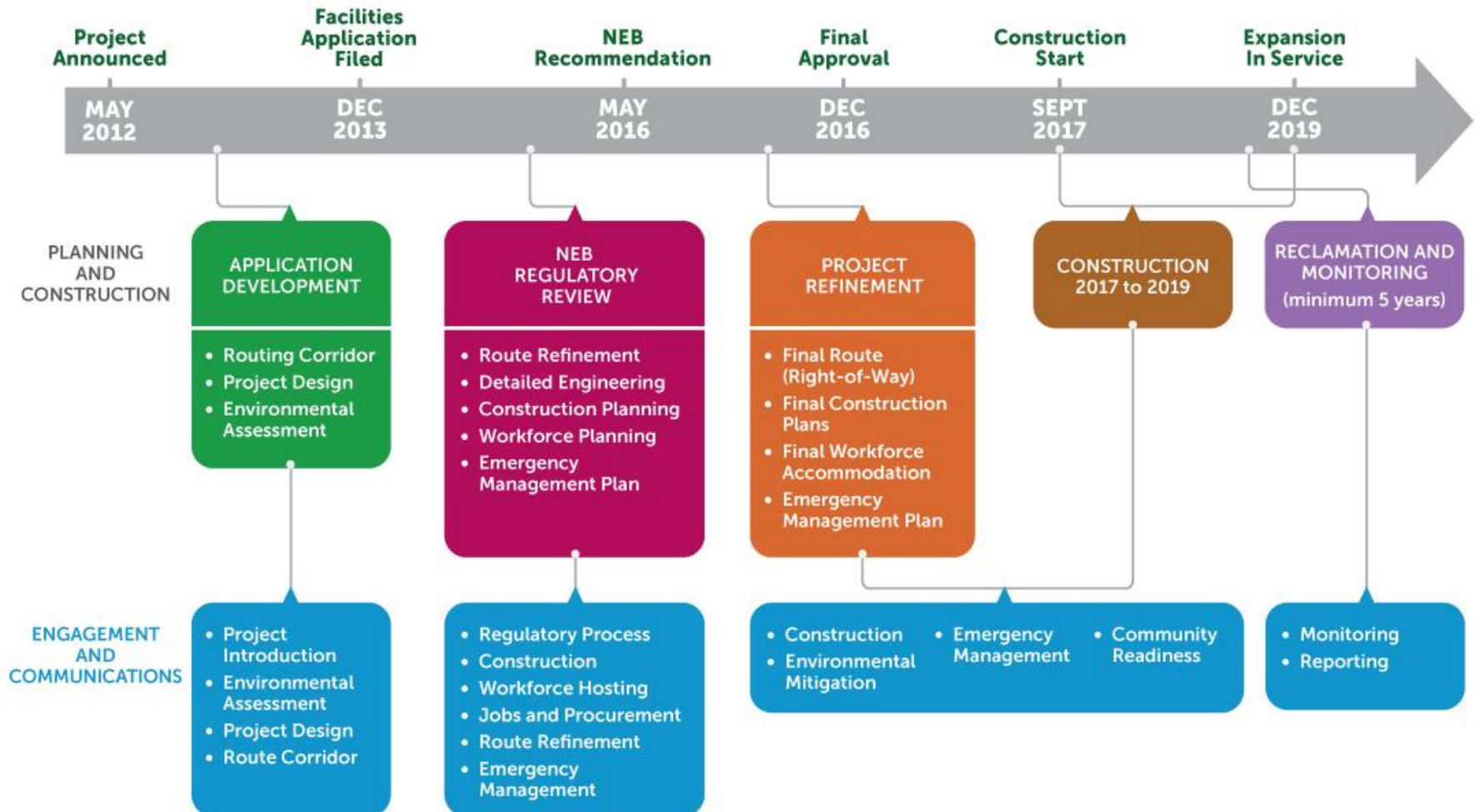
Trans Mountain Expansion Project Overview

Proposed Expansion Project



- \$6.8-billion capital cost
- Expand capacity to 890,000 bpd
- Project scope
 - 980 kms new pipe
 - 12 new pump stations
 - 19 new tanks
 - 3 new tanker berths
- Increase in tanker traffic – not tanker size
- Westridge and Burnaby Terminals construction
- Must meet 157 NEB conditions

Trans Mountain Expansion Schedule



This schedule is subject to change based on detailed construction planning and regulatory timelines

Westridge Marine Terminal Concept

Proposed dock design balances need for:

- Three berths to load up to Aframax size vessels
- Highest level of navigational safety
- Minimize disturbances to nearby residents



- New dock complex with three loading berths
- One new berth for utility vessels
- Each berth will have its own spill containment boom

Shoreline Development

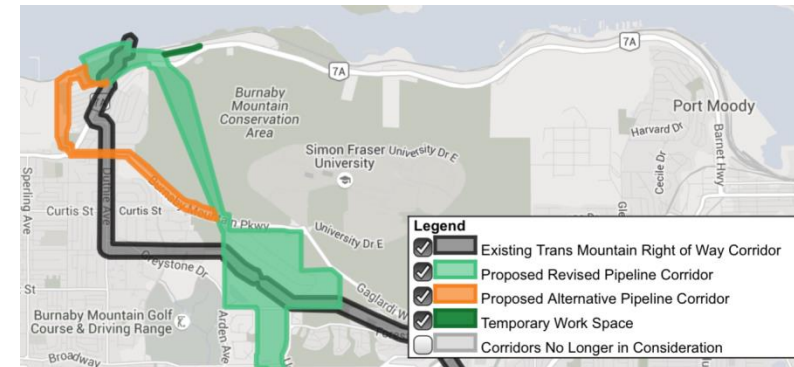
- Required to accommodate new facilities
- Reduced footprint with detailed design
- Includes equipment required to operate facility, for safety, environmental protection and emergency response
- Marine habitat enhancements
 - E.g., Fish habitat enhancements



Proposed Burnaby Mountain Tunnel

Westridge Delivery Pipeline

- Expansion requires two new 30" pipelines between Westridge and Burnaby terminals to load vessels
- Avoids construction through residential neighbourhoods
- A result of input and feedback received
- Tunnel portals on existing Trans Mountain facilities will reduce construction impact to neighbours
- Existing pipeline may be moved to tunnel, subject to separate regulatory application
- Alternate corridor through city streets remains until approval received and detailed design and engineering completed





Detailed Design, Construction Plans and Schedule: Westridge Marine Terminal

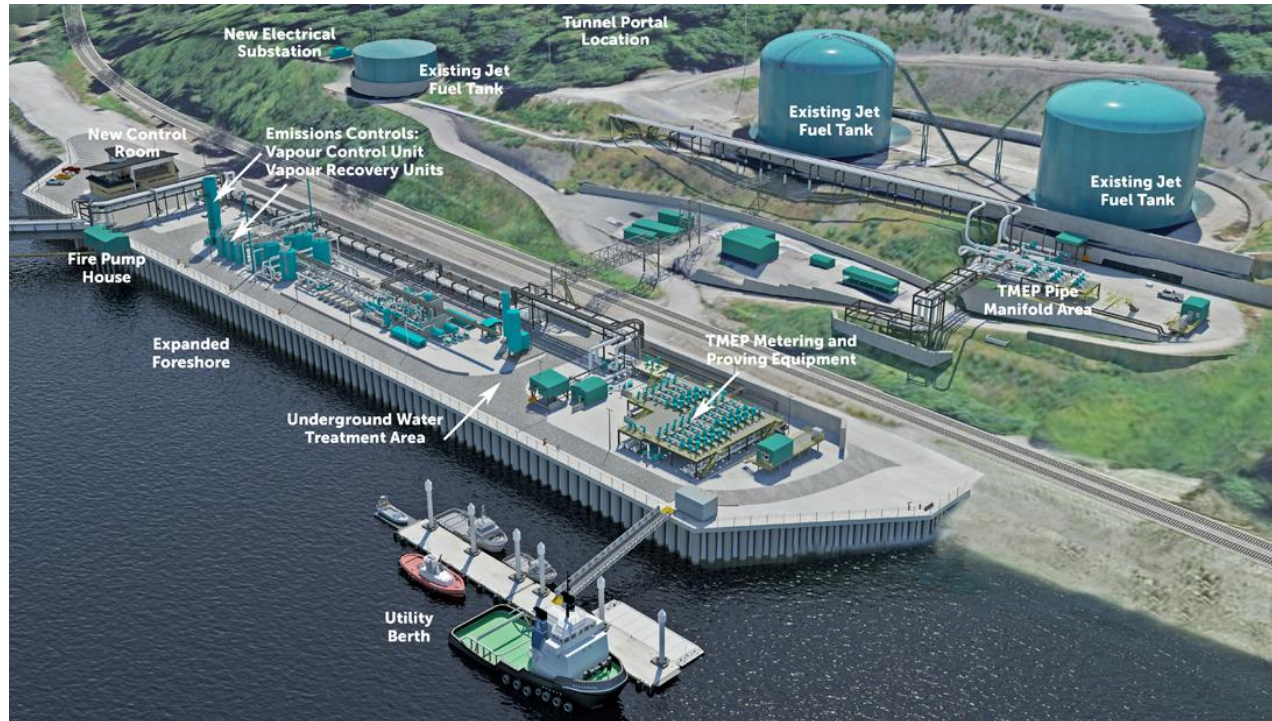
Marine Construction Overview

- Piles: Breasting Dolphin*
 - 48 piles
- Piles: Mooring Dolphin*
 - 48 piles
- Piles: Loading Platform & Trestle*
 - 80 piles
- 500 m of roadway & pipe rack trestle
- Gangway towers and loading equipment on each berths
- Fender and mooring equipment



**Pile numbers approximate and subject to change with final design*

Foreshore Expansion Construction Overview



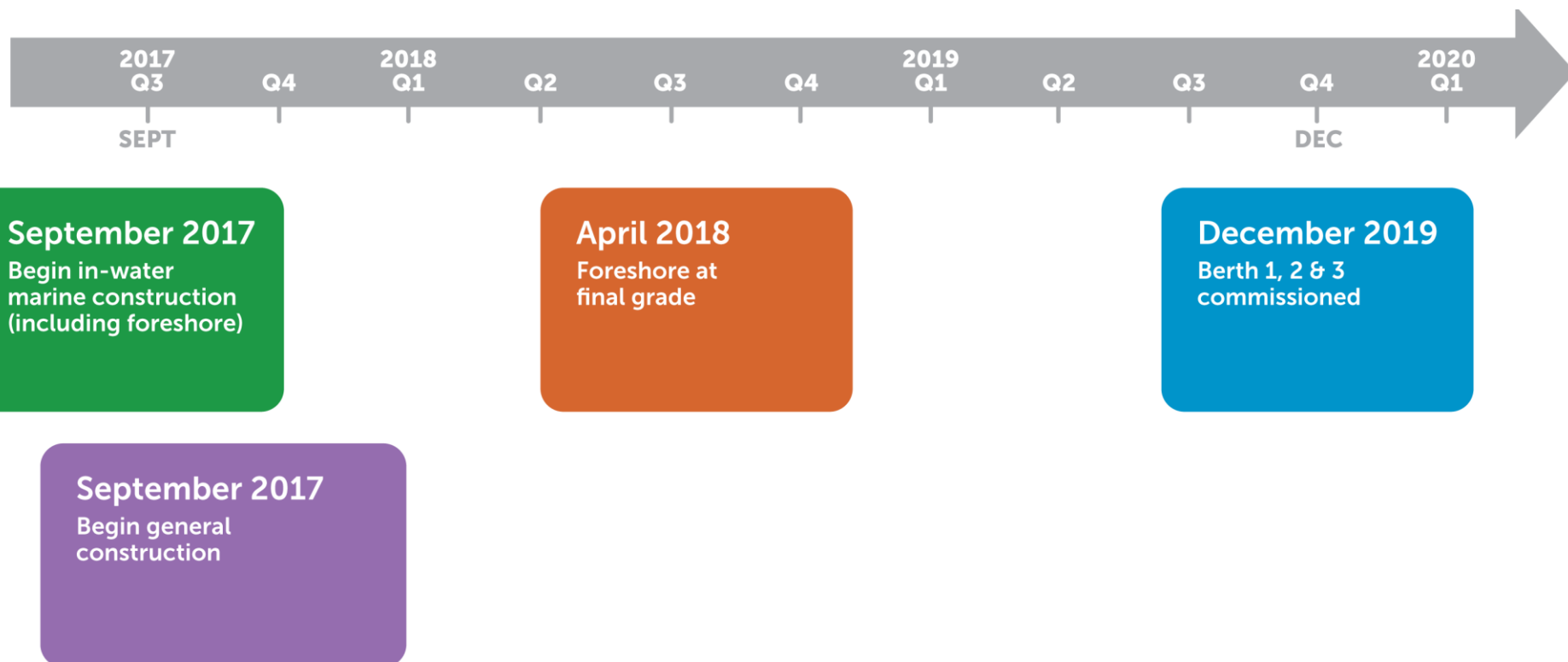
- Combi-pile wall
 - Steel pipe and sheet pile
- Rip rap removal
- Structural fill
- Sheet pile anchor wall and tie-rods
- Foreshore densification
- Safety wall to separate terminal from trains

Construction Steps: Onshore

- Prepare land
- Install
 - Pipe rack
 - Valve manifold station
 - Inline inspection receiving trap
 - Transmission line
 - Electrical substation
 - Interface with tunnel entrance
 - Trenchless underground electrical and pipe to foreshore



Westridge Construction Schedule*



*Subject to receipt of all approvals

Examples of Construction Methods: Pile Driving



Example of pile driving from a barge

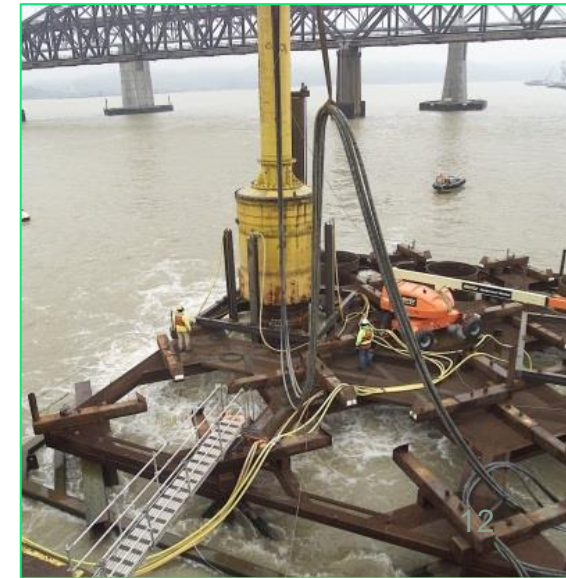


Example of pile driving and pile cleanout



Example of pile driving
shroud (noise mitigation)

Example of pile driving
bubble curtain
(sound pressure
mitigation)



Logistics

- Storage barges
 - Office trailers, lunch rooms and washrooms on barges
 - Tool trailers, warehouse and pile storage on barges
- Berth material will be supplied by tugs and supply barges
- Staff, craft and subcontract personnel will park off-site in designated areas
 - Transportation of construction workers to site by shuttle bus
- Only vehicles required to work will be permitted on site
- Anticipated work hours
 - Monday to Friday, 7 am – 6 pm
 - Saturday work possible, 9 am – 6 pm
 - Night work limited to reduced noise operations
 - No pile driving at night



Detailed Design, Construction Plans and Schedule: Burnaby Mountain Tunnel

Scope

- Excavate and support 2.6 km of 4-m diameter tunnel
- Excavation will be via Tunnel Boring Machine (TBM)
- Boring direction: Westridge to Burnaby Terminal
- Ground support will be precast concrete
- Portal excavation and support for launch and reception
- Install pipelines
- Backfill tunnel with grout

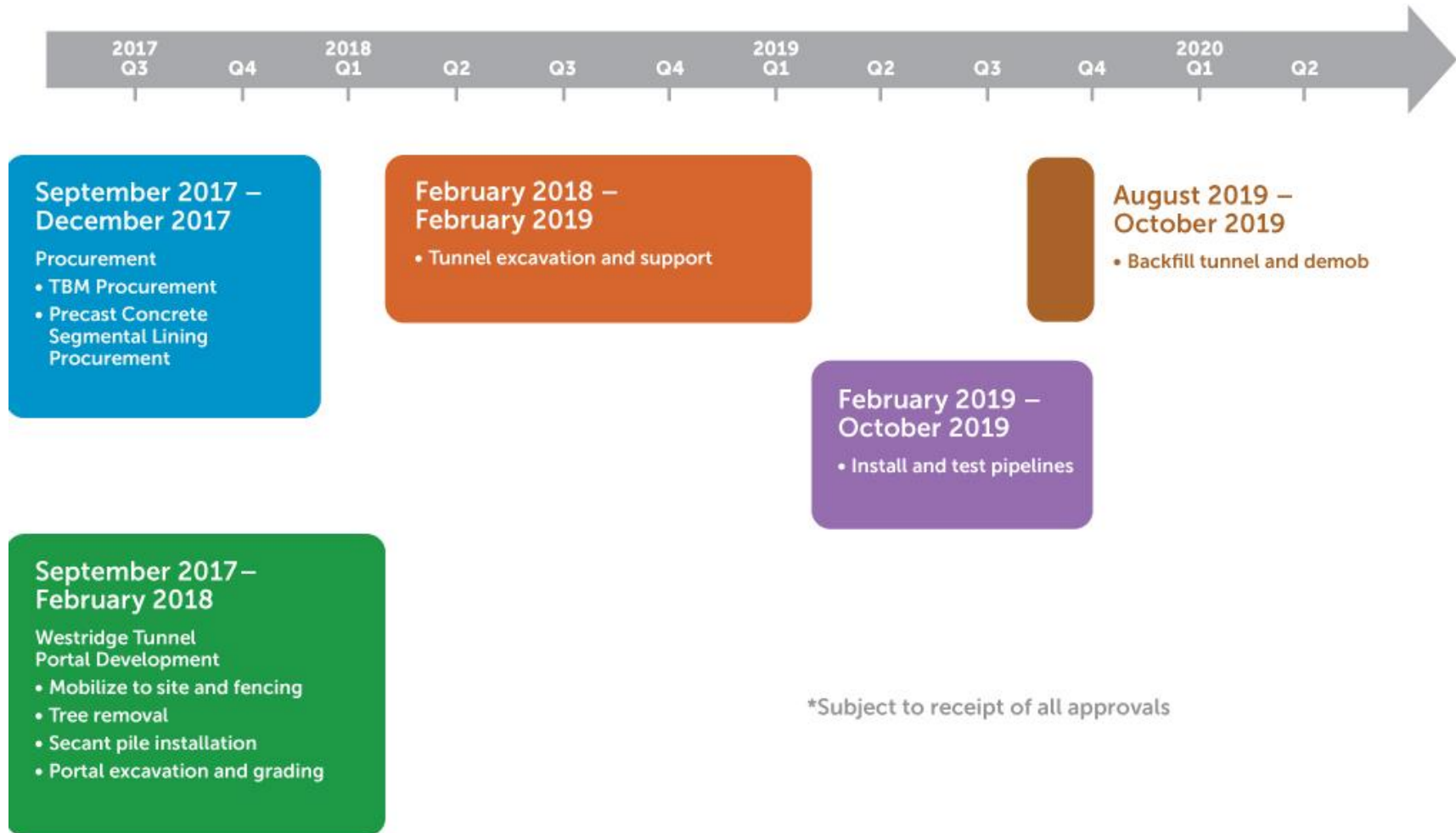


Images for illustrative purposes only

Tunnel Construction: Hours of Work

- Five days per week
- Three shifts per day
 - Two production shifts
 - One Maintenance shifts
- Weekend work
 - Maintenance and/or extra production

Tunnel Construction Schedule*



Westridge: Tunnel Portal Location



Complaints Management Process: Principles



- The goals of the process are to:
 - Address stakeholder concerns in a timely manner
 - Meet regulatory obligations
- Objectives and principles:
 - Provide multiple communication channels to address stakeholder communication needs
 - Promote process and communication channels through signage, print, online and social media as well as paid and unpaid media
 - Email, phone and voicemail access
 - Maintain a clear and discrete process for all emergency concerns and complaints
 - Provide contractors with process information
 - Ensure all inquiries and complaints receive timely responses
 - Track and report on all inquiries and complaints
 - Emergency contact availability at all times