

Global Container Terminals Deltaport Expansion Berth Four Project Project Documents: Studies & Field Work

GCT continues to advance desktop studies to evaluate the wealth of publicly available information and is committed to working with academia, stakeholders, Indigenous nations and others to continue to build on the extensive body of knowledge that exists for Roberts Bank and surrounding areas. GCT is committed to engaging with regulators and Indigenous nations on the scope and methods used to conduct future studies, the results of which will be presented in the Project's assessment. Where available and with permission, traditional use information and Indigenous Knowledge, including information related to Indigenous rights and interests will be incorporated into the Impact Assessment. This list will be updated as new studies and fieldwork commences in the region.

Marine Subtidal Sediment Survey

Sediment quality is an important indicator of environmental quality. Changes in the physical and chemical characteristics of sediments can have direct and significant effects on aquatic life, particularly epibenthic (e.g., Dungeness crab) and infauna (i.e., invertebrates living in the sediments).

Water Quality and Oceanography

Water quality is also an important indicator of environmental quality, and changes in water quality can, directly and indirectly, affect aquatic life. In the coastal marine environment, water quality is significantly influenced by tidal cycles and seasonal changes such as the discharge of the Fraser River. The water quality characterization is focused on the conditions in the berth area and the immediate vicinity, these conditions will be important for characterizing potential effects to aquatic life.

Seasonal Fish Assemblage

Marine fish are critical components of estuarine and marine food webs, influencing the structure and function of nearshore and offshore ecosystems, and contributing to overall ecosystem health. Many species are also of social, economic, and cultural importance to local communities and Indigenous groups that use the Fraser River Estuary. Fish are collected, identified, measured, and released back into the sampling location. This study is designed to answer the following question: How will fish habitat use and productivity be altered by the potential DP4 footprint?

Forage Fish Spawn Survey

Forage fish (e.g., surf smelt) have been found to spawn at a constructed beach east of the DP4 footprint along the south shoreline of the Roberts bank causeway and east of the Tsawwassen Beach. Other potential spawning habitats may occur adjacent to the DP4 footprint since suitable sediment for surf smelt and Pacific sand lance spawning was observed along the southern shoreline of the Roberts Bank Causeway. The objective of this study is to identify the location of suitable upper intertidal forage fish beach spawn habitat and estimate egg abundance and density.

Adult and Juvenile Crab Surveys

Dungeness crabs are a vital part of the marine food web, serving as both predators and prey throughout their life cycle. Estuaries are important nursery habitats for juvenile Dungeness crabs, and thus are essential to produce future adult stocks for fisheries. Populations will be estimated by conducting surveys within the inter-causeway, north of Roberts Bank causeway, and at Boundary Bay, using commercial traps for adults and on-foot surveys for juvenile crabs. The Dungeness Crab Productivity study is designed to address the following question: How might the habitats potentially affected by the DP4 footprint affect habitat utilization and abundance of Dungeness crabs?

Shorebird Migration Survey

Despite the importance of the Fraser River Estuary (FRE), and specifically the Roberts Bank area, to shorebirds, the population status and trends of many shorebird species that use the site remain uncertain. Surveys of shorebirds and their diet are conducted from the shore during northward (spring), southward (summer), and during overwintering to allow for the characterization of existing conditions in the FRE and provide a basis for assessing potential Project effects.

Shorebird Fecal Survey

Fecal counts are an effective means of accurately assessing sandpiper density on mud and sand flats and provide a measure of habitat use (e.g., location, abundance, timing, duration). Fecal samples are collected from mud and sandflat habitats in the inter-causeway, north of Roberts bank Causeway, and in central Boundary Bay. Laboratory analysis of fecal samples are completed to reveal diet information (e.g., composition and abundance/quantity) for different shorebird species that use upper intertidal habitats. Fecal counts can be compared to visual surveys of birds, and samples of infauna and biofilm, to determine links to important feeding areas.

Intertidal Benthic Infauna Survey

Benthic infaunal (organisms living within sediment) invertebrates (e.g., annelids, arthropods, molluscs) comprise a vital component of shorebird diets. Sediment is collected within the inter-causeway and around the project footprint on the north side of the Roberts Bank causeway, and species found within the samples are identified and sent to a laboratory for analysis. This study will be used to understand shorebird diets and describe the general shellfish distribution in the area.

Biofilm Distribution and Quality Survey

A layer of biofilm often forms on the top 2 mm of intertidal mud and sandflats in the Pacific Northwest and is an important food source for shorebirds. Changes to the quantity and quality of biofilm at Roberts Bank could have a negative impact on the high densities of shorebirds that use the mud and sandflats to rest and refuel during migration. Biofilm is collected within the inter-causeway and north of the Roberts Bank causeway, and analyzed to determine the distribution and abundance within the study area.

Marine Intertidal Habitat Mapping

The main objective of the intertidal vegetation aerial imagery and ground-truthing surveys is to map all intertidal vegetated and non-vegetated marine-influenced areas, which provide habitat and food sources for other biota (e.g., crabs, salmonids), that may be affected by the Project. Understanding the overall area and value of habitats within the local assessment area is necessary for determining how the Project will affect intertidal habitats, which habitat types are the most vulnerable, what permitting is required, and how to offset potential effects.

Underwater Towed Video Survey

A camera recording system will be paired with a Seabed Imaging and Mapping System to obtain information on the types and extent of each underwater marine habitat and its main characteristics (e.g., substrate, vegetation type, etc.), absence/presence of identifiable fish and invertebrates, and provide information to help inform other types of field studies, e.g., where sediment, benthic infauna and fish sampling should be located.

Rocky Intertidal Survey

Rocky intertidal habitats occur in the Fraser River Estuary and around the Project footprint. At Roberts Bank, intertidal rocky substrates include gravel, cobble, boulder, and riprap shore protection. Rocky intertidal shorelines are biologically rich habitats that support a diversity of marine species. These communities typically consist of an assemblage of mobile and sessile (i.e., sedentary) benthic invertebrates (e.g., barnacles, oysters, sea stars, crabs, anemones, etc.) and marine vegetation (i.e., macroalgae). The purpose of the survey is to determine the productivity of rocky intertidal habitats within the Project footprint and inter-causeway area by using a mixed-methods approach of qualitative surveys and underwater videos.

Eelgrass Productivity Survey

Eelgrass beds are among the most productive and diverse marine ecosystems, providing essential structure, functions, and services such as shoreline protection, nutrient cycling, and carbon storage. Native and non-native eelgrass beds are prevalent around the Fraser River Estuary and within the inter-causeway area. Eelgrass health will be assessed by measuring leaf area, algae presence, and reproductive status of shoots. In addition, all invertebrates living on eelgrass blades and within eelgrass roots will be collected, identified, and counted.

Atmospheric Noise Survey

The assessment will include baseline noise monitoring at specified locations, development of existing conditions model to quantify the existing ambient noise levels throughout the local assessment area and development of a model to predict the future noise levels, both with and without the Project. The atmospheric noise assessment predicts the noise levels within the context of considering the potential for human health effects, however, the results of the assessment will also be relevant for other components of the Project.

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