1.1 Current definitions

The current in the area depends strongly on wind direction and speed, tide, and time of year. Previous technical reports based on surveys, Ref/2/ and Ref/3/ show that the current patterns in the area are very complex with stratified currents of rather different direction and speed. I.e. the average surface current runs towards open sea where as at the depth current runs towards inland waters. According to Ref/2/ the currents in the area are characterized by typical flow speeds of about 15 to 30 cm/s at the surface. The highest surface currents were measured in the outer seaward parts of the area including Campania Sound, Caamaño Sound and Principe Channel while Kitimat Arm of Northern Douglas Channel appears to have lower surface currents. Maximum surface currents range from 50-60 cm/s in Kitimat Arm, to 90 - 100 cm/s in southern Douglas Channel, to well over 100 cm/s in the seaward portions of the area and in Principe Channel. The maximum current measured in the inland part of the area is 0.78 m/s ~ 1.56 knots.

For the present study the ebb and flood current conditions were modelled as a depth-averaged spatially varying current given by the speed and the direction. The ebb tide flows in a SE direction along the outer coast. If there is outflow in Douglas Channel (ebb tide) there will be a SE flow through Principe Channel and at the south end of Grenville Channel. The flood tide runs NW along the outer coast. It reverses in the channels where there is an island big enough to delay the north going flood. Therefore the current direction to the west of the islands is NW during the flood. Also the flood current runs north past the west entrance of Otter Channel and north through Principe Channel. The flood tide sets to the west through Otter Channel except on small tides where it tends to go to the east on the flood. In the model description the current is running towards west in Otter Channel. The current speeds for the flood tide condition were 3.0 knots in Principe Channel reducing to 0.6 knots in the Douglas Channel. For the ebb tide condition the current speeds were 3.0 knots in Principe channel and from 1.0 knots in the northern part of the Douglas Channel to 2.0 knots in the southern part of Douglas channel.

The description of the current patterns for the Kitimat area was generated on the information provided by Ref/2/, the nautical charts and information from British Colombia Coast Pilots. The nautical charts were used at the locations on which Ref/2/ did not have any available information. In other areas in which Ref/2/ and the nautical charts had no available information, the current description was based on experience and knowledge of the local pilots. The final descriptions of the ebb current and flood current conditions were reviewed by the pilots and are shown in Figure I.1 to Figure I.6.

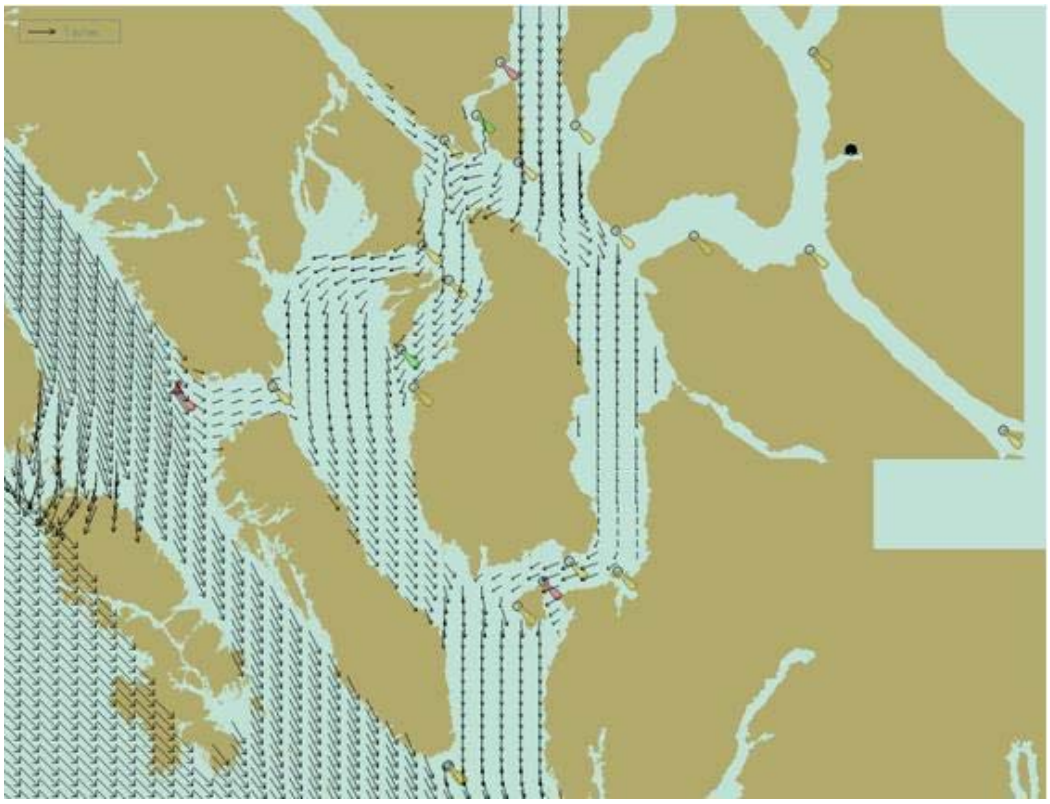

Figure I.1 Ebb Current condition in Wright Sound, Lewis Pass, Otter Channel, Whale Channel, Squally Channel and Nepean Sound

Figure I.2 Ebb Current condition in Laredo Channel and Sound

Figure I.3 Ebb Current conditions in whole area and open sea

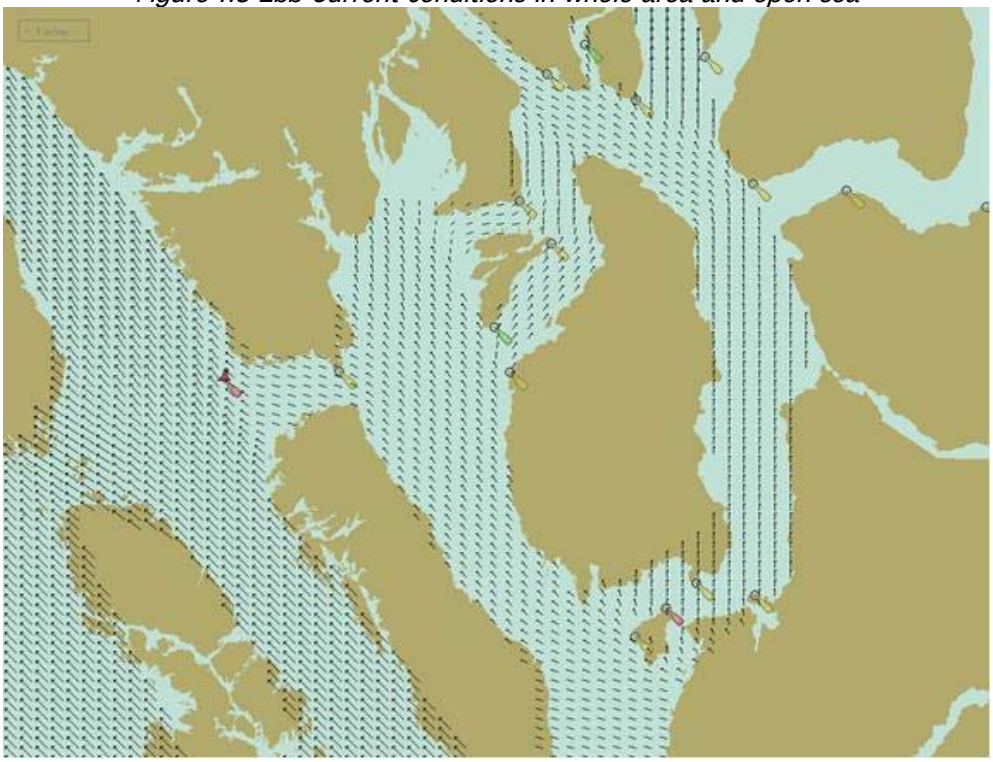

Figure I.4 Flood Current Conditions in Wright Sound, Lewis Pass, Otter Channel, Whale Channel, Squally Channel and Nepean Sound.

Figure I.5 Flood Current condition in Laredo Channel and Sound.

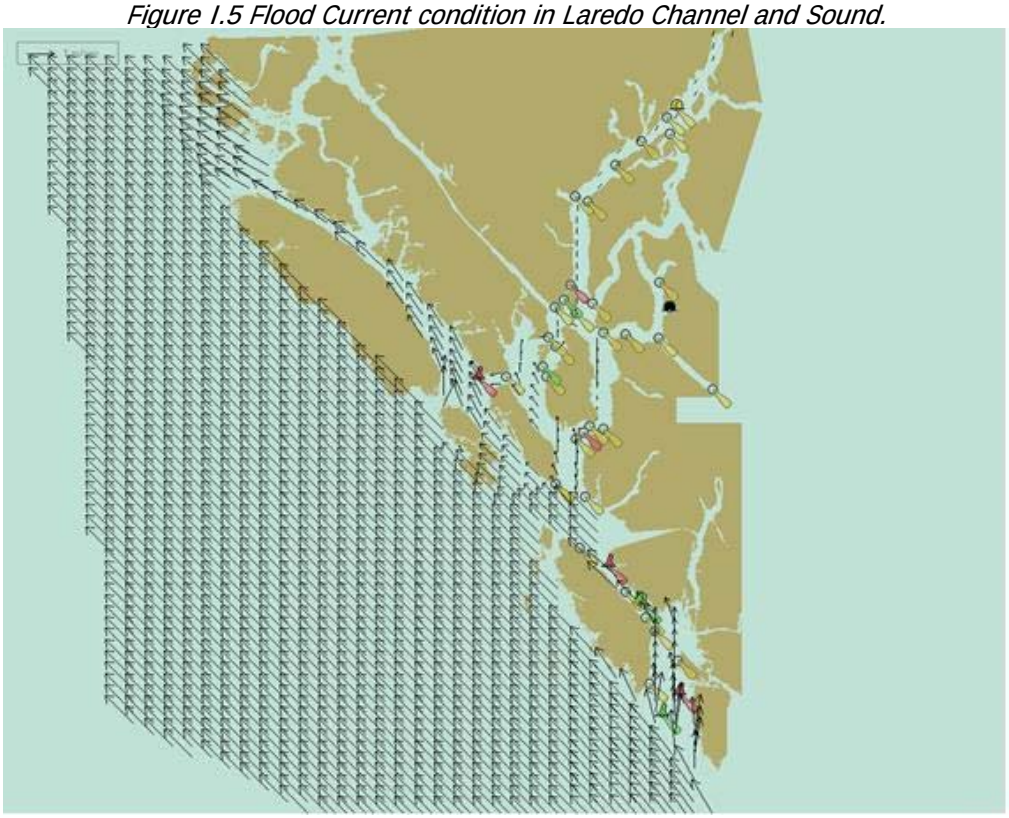

Figure I.6 Flood Current conditions in Principe Channel and open sea.