

Attachment 3.1- Proposed Maritime Usage

The proposed works to be covered under this MUL as mentioned in Section 3.1 of the application form are summarised as follows:

- Deployment of up to fourteen (14) bottom mounted ADCPs. Additionally, four (4) vessel-mounted ADCP will be required for locations VADCP02, VADCP03, VADCP04 and VADCP05 (Attachment 3.5).
- Deployment of nine (9) tide gauges.
- Additional ancillary data will also be collected at the ADCP and tidal gauge locations such as conductivity, temperature and depth (CTD) measurements.
- Bathymetric surveys of the intertidal areas using either single beam & multibeam echosounders, or a combination of these technologies.
- Water quality sampling from the shoreline and from a vessel at multiple locations within each proposed licence area.

More details of the proposed works can be seen below:

ADCPs

Bottom mounted surveys will be conducted using an ADCP, exact make and model to be determined, with an operating frequency between 200 kHz to 500 kHz. The ADCPs will be carefully deployed from the vessel's deck onto the seabed using a deck crane or A-frame with a winch at predetermined locations (Attachment 3.5) in water depths less than 100 m only. The ADCP surveys will contain no more than a single ADCP within each proposed ADCP survey area – the exact placement location will be based on available charts, habitat maps and the National Monument Service Shipwreck Database to ensure they are placed on suitable habitats clear of identified underwater cultural heritage. During operation, the ADCPs will be left in place on the seabed for a minimum of 35 days and a maximum of 60 days contained within a trawl resistant housing. To facilitate recovery, an acoustic release mechanism will be employed. When activated, it sends a ranging ping to the release mechanism. If successful, this mechanism releases a buoy connected to a recovery line. The vessel can then manoeuvre into position over the buoy and retrieve the ADCPs onto the boat using the crane. In cases where the acoustic release fails, the ADCPs are equipped with acoustic pingers that can be activated to assist in locating the ADCP instruments. Another attempt can then be made to activate the acoustic release. If this attempt also fails, the ADCP will be recovered using a grapple recovery method. This involves dragging a line with a grapple attached across the seabed in the deployment area to catch the grapple line between the ADCPs and the grapple anchor. To avoid unnecessary interaction with underwater archaeology prior review of the underwater cultural heritage (UCH) database will be carried out prior to the surveys.

Vessel mounted surveys will be conducted by lowering the ADCP from a vessel or bridge either manually or using a mechanical winch. The ADCP will remain vessel mounted (i.e. will not be placed on the seabed).

Tide Gauge

The proposed tide gauges will be mounted on existing fixed structures, quaysides or navigation markers. All tide gauges should be in place for a minimum of 35 concurrent days (Attachment 3.5).

Water Sampling

Water sampling will either be undertaken from vessel or from shore. This will involve a hand-held multi-parameter passive sonde and/or Niskin bottle to collect water samples, required for calibrating a hydrodynamic model (Attachment 3.5).

CTD Monitoring

Conductivity-temperature-depth sonde that passively monitors the conductivity, temperature and pressure to provide depth of water. The instrument may be deployed in one of the following ways:

1. Lowered and raised manually or using a mechanical winch from a vessel or bridge over a channel.
2. Attached to a tide gauge
3. Placed inside an ADCP mounting or trawl resistant housing.

Bathymetry

Surveying of intertidal areas may require a combination of vessel mounted methods including single beam & multibeam Echosounders (Attachment 3.5).