3. Monitoring Equipment

3.1 Noise

Noise Monitoring equipment used on the NEOM project shall conform to the following minimum standards:

- any sound level meter used to undertake measurements shall comply with the requirements for a 'class 2' instrument or better as defined in IEC 61672-1[6] and IEC 61672-2[7];
- any calibrator shall comply with the requirements for a class 2 specification or better as defined in IEC 60942[8];
- a windshield that is effective for the nature of the measurement being undertaken, shall be fitted to microphones;
- The measurement system shall measure Sound Pressure Level over the frequency range 20 Hz to 20 kHz, and be capable of applying the "A" frequency weighting and the "Fast" time weighting;
- the measurement system shall be capable of recording a Waveform Audio File Format (.wav) file of 2 minutes per hour where the surveyor determines that the acoustic environment may possess characteristics that may need further investigation off-site;
- continuous measurements shall log the following weighted parameters for every 15 minute interval: $L_{Aeq,15min}$, L_{AFmax}, L_{AFmin}, $L_{A10,5min}$, $L_{A90,5min}$;
- continuous measurements shall log the un-weighted (or Z-weighted) $L_{peq,5min}$ in octave bands between 31.5 Hz and 8 kHz every 5 minute interval;
- the measurement system shall be equipped with a memory device in order to store the data locally. The power supply and storage size shall be sufficient for the type and duration of the measurements; and
- be capable of synchronisation to an external clock, for the following reasons:
  - contemporaneous observations of precipitation and wind speed and direction shall be recorded. For long-term monitoring, this will require correlation to a nearby met station (less than 20km away); and
  - for a measurement site or for any receptor, the clocks on all sound level meters and meteorological stations shall all be synchronised to a global positioning system / radio-clock to ensure consistency of timings and to allow for correlations between measurement locations. The precision of the synchronization system will depend on the desired accuracy of the measurement undertaken.

[6]International Electrotechnical Commission (2013). IEC 61672-1:2013, Electroacoustics - Sound level meters - Part 1: Specification. Available at: https://webstore.iec.ch/publication/5708
[7]International Electrotechnical Commission (2013). IEC 61672-2:2013, Electroacoustics - Sound level meters - Part 2: Pattern evaluation tests. Available at: https://webstore.iec.ch/publication/5709
[8]International Electrotechnical Commission (2017). IEC 60942:2017, Electroacoustics - Electroacoustics - Sound calibrators. Available at: https://webstore.iec.ch/publication/30045