



Kintyre Hunterston HVAC EPS Risk Assessment - Addendum

Supplementary Information

Document Classification | **Public**



TRANSMISSION

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Introduction

This document aims to provide supplementary information to the original EPS risk assessment document (A-200409-S04-REPT-002) submitted as part of the original EPS and basking shark derogation licence application for survey of the Kintyre-Hunterston HVAC cables. Additional to the vessels and geophysical survey equipment detailed in our application survey scope, Unmanned Surface Vessels (USV), an Autonomous Underwater Vehicle (AUV) or a Remotely Operated Towed Vehicle (ROTV) may be used to complete inspection surveys. This document provides an EPS Impact Assessment for the use of USV, AUV and ROTV survey equipment, in line with the assessment produced in Section 3 of the original EPS risk assessment document.

Survey configuration for AUV, USV, or ROTV

A single AUV, up to two USVs or an ROTV may be used to undertake geophysical surveys. The unmanned vessels would be accompanied by a support vessel. If an ROTV is used this will be towed by a survey vessel. The support vessel or towing vessel mentioned would fall within the parameters of the survey vessel assessed in the main EPS risk assessment.

Specification of AUV, USV, and ROTV

Any USVs used would be less than 24m in length. AUVs used are likely to be less than 10m in length.

When transiting, the average speed of both USV and AUVs are significantly slower than traditional survey vessels, with USV capable of speeds of up to 8 knots, and AUV speeds averaging at 5 knots (J. Hunt, 2013). Average survey speeds for USVs, AUVs and survey vessels towing an ROTV will be approximately 3-4 knots.

Acoustic emissions from AUV, USV, and ROTV

USV vessel noise frequencies largely fall below 1kHz and AUV propulsion noise frequency falls between 10Hz to 100kHz (Cascio, 2010). There is limited evidence of noise intensity from unmanned vessels but it is acknowledged that they produce a lower sound intensity than traditional vessels due to their smaller size and the reduced or lack of engine noise produced.

Summary

The acoustic impact of using these smaller unmanned vessels is likely to be less than that outlined for traditional survey vessels, and therefore the impact assessment in the original risk assessment is largely representative of the worst-case impact. However, the use of the proposed additional vessels may increase the vessel collision risk with marine mammals and basking sharks, associated with the works. A summary of the anticipated impacts of using unmanned vessels is set out in Table 1 and any additional mitigation proposed has been captured.

Risk Assessment USV, AUV and ROTV

Table 1 Overview of potential impacts of USV, AUV and ROTV equipment on EPS and pinnipeds within the vicinity of the Kintyre-Hunterston HVAC Link

Activity/Equipment	Example Equipment	Potential Impacts	Frequency Range	Indicative SPL _{PEAK} (dB re 1 μPa)	Further Information required for EPS risk assessment
Unmanned Surface Vehicle (USV)	Various	<p>Noise produced is continuous and comes in broadband emissions, similar to other survey vessels. Generally, this noise is of lower intensity than traditional manned vessels.</p> <p>Increased vessel activity additionally has the potential to cause injury to marine mammals and basking sharks from collisions. The risk of collision with an animal is influenced by the dimensions of the vessel and its speed, hence USVs pose a reduced risk when compared with conventional vessels due to their smaller size and slow survey speeds. However, the increased number of vessels in the water may introduce a collision risk for basking sharks as they are less responsive than marine mammals, especially when foraging.</p>	Acoustic range from vessels is strongest at frequencies <1k Hz	<24m length vessel = Variable dependent on the type of USV.	<p>No –The source levels associated with vessel noise are likely to be too low to result in injury, and the presence of up to two USVs in the West Highlands region does not constitute a significant change from the impacts set out in the existing EPS risk assessment. The predominant noise source during survey activities is the USBL and other geophysical sensors deployed on the vehicle, which are expected to mask any sound generated by the vehicle itself.</p> <p>It is acknowledged that unmanned vessels could pose a collision risk to EPS and other protected species. All support vessels will adhere to The Scottish Marine Wildlife Watching Code (SMWWC) (NatureScot, 2017), as detailed in Section 5.2 of the EPS Risk Assessment. A search for basking sharks will be carried out prior to starting an unmanned vessel survey as described in 'Additional Mitigations' section below.</p>

Autonomous Underwater Vehicles (AUV)	Various	Potential disturbance of marine mammals and basking sharks could occur from noise emissions associated with AUV movements underwater. However, these are anticipated to be limited, given the small size of the submerged vehicles. Collision risk with marine mammals is considered to be unlikely, given the slow survey speeds associated with AUVs and the responsiveness of marine mammals. A collision risk may be posed to basking sharks as they are less responsive than marine mammals, especially when foraging.	10Hz to 100kHz (Casco, 2010).	N/A	No – the predominant noise source during survey activities is the USBL and other geophysical sensors deployed on the vehicle, which are expected to mask any sound generated by the vehicle itself. The geophysical sensors have been assessed in original EPS risk assessment. A search for basking sharks will be carried out prior to starting an unmanned vessel survey as described in 'Additional Mitigations' section below.
Remotely Operated Towed Vehicle (ROTV)	MacArtney ROTV	Potential impacts to EPS and other marine mammals and basking sharks include collision risk. Collision risk with marine mammals is considered to be unlikely, given the small dimensions and slow towing speed during survey, and the responsiveness of marine mammals. A collision risk may be posed to basking sharks as they are less responsive than marine mammals, especially when foraging.	N/A	N/A	No - the predominant noise source during survey activities is the USBL, and other geophysical sensors deployed on the vehicle, which are expected to mask any sound generated by the vehicle itself. The geophysical sensors have been assessed in original EPS risk assessment. A search for basking sharks will be carried out prior to starting an unmanned vessel survey as described in 'Additional Mitigations' section below.

Additional Mitigation

All mitigations set out in Section 5 of the original risk assessment will still be adhered to during survey.

Additionally, a 20-minute search for basking sharks will be carried out prior to starting an unmanned vessel survey. The survey will be delayed or moved to a different location in the event that the pre-start search identifies basking sharks within 500m of the survey line. A watch for basking shark will be maintained throughout the survey and if basking sharks are observed on the survey line, the unmanned vessel will be slowed down or re-routed to avoid the area, if possible.

Conclusion

The use of Unmanned Surface Vessels (USV), an Autonomous Underwater Vehicle (AUV) or a remotely operated towed vehicle (ROTV) to complete inspection surveys poses no anticipated adverse impacts through injury to EPS. Vessel noise impacts are unlikely to differ from those assessed in the original EPS risk assessment. Collision risk is not deemed to cause a significant risk to marine mammals due to the slow survey movements of the equipment in question and the responsiveness of marine mammals. Any collision risk posed to basking sharks introduced by the use of unmanned vessels will be mitigated for by a basking shark search prior to unmanned vessel survey commencing and throughout the unmanned survey.

All 'Species Protection Measures' detailed in Section 5 of the main EPS risk assessment (A-200409-S04-REPT-002) will also be adhered to during the use of USV, AUV or ROTV vehicles. A full assessment and conclusion on any risks posed by geophysical survey equipment are set out in the main risk assessment (A-200409-S04-REPT-002).

References

J. Hunt. 2013. Global Inventory of AUV and Glider Technology available for Routine Marine Surveying.

Cascio, CA. 2010. Acoustic noise estimates for a quiet unmanned underwater vehicle. *The Journal of the Acoustical Society of America*. Vol 127, Issue 3