

Belstead Research Ltd; Early warning system for space debris Earth impact response

Project Summary

As concerns over space debris increase, future missions will be required to dispose of spacecraft and upper stages post-mission. Typically this is most efficiently achieved by the destructive re-entry of the vehicle into the Earth's atmosphere. However, it is well known that these vehicles are not completely destroyed in re-entry, and therefore there is a risk of casualties on the ground.

Although the prediction of re-entry timing is notoriously difficult, the prediction of when an entering object could impact the surface within a given zone of interest is much more certain. By utilising the state-of-the-art destructive re-entry capability existent at BRL, this prediction can be improved, and a surface impact risk level for dangerous objects can be provided. From this, an operational early warning system to place emergency services on standby to respond to potential risks, could be constructed.

This project will develop a proof of concept demonstrator of the potential capability of such a system, which will produce a map of the timing and risk level of potential impacts within a zone of interest.