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The development of a bespoke gunfire noise model for a military training area and the vibration impacts through the air on ancient structures

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This paper describes the development of a bespoke weapons system noise model known as the gunfire noise analysis tool (GNAT). The requirements for such a model came out of an expansion of military training within a National Park and the need to demonstrate that noise impacts could be modelled with reasonable accuracy out to distances of 10kms and without the need for specialist acousticians or meteorologists to run the model. Additionally, the requirement was to ensure that noise modelling could be carried out within a matter of minutes thus allowing military training decisions to be made whilst protecting sensitive receptor locations from very high noise levels. The model utilised best practice and acoustic theory available at the time within the specific requirements of noise modelling outlined above. The model was validated against a number of noise measurements exercises carried out using controlled military noise events and for a live military exercise.