19 A small loudspeaker emits 2.5 J of sound energy every second at a frequency of 3000 Hz. The amplitude of a sound wave of intensity $1.0\,\text{Wm}^{-2}$ at 3000 Hz is $4.0\,\mu\text{m}$.

The intensity I of the sound at a distance r from the small source is given by the equation

$$I = \frac{2.5}{4\pi r^2}.$$

What is the amplitude of the sound wave at a distance of 1.0 m from the loudspeaker?

A $0.16\,\mu\text{m}$ **B** $0.80\,\mu\text{m}$ **C** $1.8\,\mu\text{m}$ **D** $3.2\,\mu\text{m}$