

Overview & Scrutiny Board

17th March 2022

Briefing Note – Motion in respect of Fireworks

1. *Ensure our annual Bonfire Night event and all other public firework displays within the district are advertised well in advance, allowing residents to take precautions for their animals and vulnerable people.*

- The Events Team has reviewed the option for providing a quieter firework display at Sanders Park through its procurement process. The tender responses from the Pyrotechnic companies highlighted the complexity for a quieter display and provided the following information:

Noise Levels

The accepted maximum noise level for fireworks is 120dB at a viewing distance of 50 metres. The majority of professional display fireworks are designed to perform at this level.

It is possible to determine the variation of sound level with distance, using the formula: $L(2) = L(1) - 20 \cdot \log(R1/R2)$

*Where $L(1)$ = Loudness at radial distance $R1$ from Source
 $L(2)$ = Loudness at radial distance $R2$ from Source*

The following table shows the variation in sound level with distance, assuming that fireworks emit 120dB at 50 metres.

| | | | | | |
|------------------|-----|-----|-----|-----|-----|
| Distance (m) | 50 | 100 | 150 | 200 | 250 |
| Sound Level (dB) | 120 | 114 | 111 | 108 | 106 |

A sound level analysis is provided in a supplementary document, as part of the show design.

The perceived impact is presented as follows:

| dB Range | Noise Level Perception |
|-----------------|-------------------------------|
| ≤ 115 | LOW |
| $> 115 < 120$ | MEDIUM |
| ≥ 120 | HIGH |

*The firework content of each display has been selected so that 45% lies within the 'Low Level' noise range. **Experience has shown that a display based entirely on low-noise effects lacks drama and***

impact and is not recommended for seasonal events where a large audience is expected.

- The Events team has also investigated concerns raised with regard to climate change and CO2 emissions and has received the following estimated calculations:

Fireworks

- Typically, a **15 minute** firework show would have a net explosive content of 150 kg.
- The CO2 + CO emissions are approximately 40kg
- This is equivalent to an average car travelling for 320km
- It is also equivalent to a 60kVA generator running for 63 minutes. (It is worth remembering that generators running the lighting towers and funfair for several hours would contribute far more to carbon emissions than a short fireworks display).
- To offset the carbon emission for the **display**, you would need to plant 0.2 trees.
- Pro-rata for a **12 minute** display the CO2 + CO emissions are approximately 33kg (the difference between 12 minutes and 15 minutes is not really significant in the overall scheme of things).

Spectator / parking contribution etc.

- This is more difficult to estimate as precise information is not available. I have **estimated** that 3000 people travel an average distance of 3km to the park, by car. This generates a CO2 + CO emission of around **400kg**.

The estimate for the total CO2/CO emission produced by the event is approximately 440kg. This includes the fireworks display and the spectator 'contribution'. It excludes contribution from the bonfire (wood burning) and other aspects - particularly generator running for funfair, lights etc. One 60kVA generator running for 4 hours will exceed the emissions produced by the fireworks and spectators!

- The Events Team is currently reviewing the events programme, based on the evidence above, to provide a light/illumination event, with music choreography to replicate the firework display event but without the emissions, noise and climate impact.
With the uncertainty around COVID-19 and to ensure the management of crowds the lights show will be held over two evenings.

- The Events team will continue to ensure communication is clear with the residents of Bromsgrove District and work with the Council's communications team.
- The Events Team will continue to work with the SAG (Safety Advisory Group) which includes the emergency services, to work together on a public awareness campaigns of the lights/illumination event.