

Silent Track: Information Required for Review.

David,

Following our conversation earlier we understand you need the following information:

- Rail cross section
- Rail pad dynamic stiffness
- Type of sleeper
- Type and dynamic stiffness of under sleeper pad (if applicable)

I am awaiting a check of the rail cross section, but have attached a photograph (Appendix 5c) from sections A to G which shows the arrangement of the track.

The rail pads are Pandrol 6650 rail pads which are relatively soft 'Type A' pads with a dynamic stiffness of about 120MN/m (Pandrol quote static stiffness of 89 MN/m using an earlier test method). I have attached the brochure for these (Appendix 5 a).

Concrete Sleepers are being used.

The attached paper (Appendix 5b) describes the STARDAMP model (essentially a simplified TWINS model) for prediction of rail damper performance, including the use of measured decay rates. The example predictions (section 3.2) seem to largely match the EWR scenario – typical regional train at 120km/h – and considers soft and hard rail pads, although it looks as though the dampers are Schrey & Veit rather than Tata. Results suggest a 2.5dB benefit due to rail dampers for soft pads, 0.7dB for hard pads.

The relative contribution of traction sources will obviously depend on train speed and type of rolling stock, but traction sources are only likely to become more significant if wayside barriers are present. The contribution of traction and other auxiliary noise sources will be highly dependent upon the type of rolling stock. To carry out a detailed assessment including dampers, barriers and traction noise would probably involve a substantial amount of work, and would probably end up with results which broadly agree with assuming a reduction which is slightly lower than 3 dB(A) under screened conditions.

I will follow up with additional information when I have confirmed it. Please let me know if this is sufficient for the current purposes.

Regards

Mike

Mike Fraser  
Principal Consultant

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