

A1 Birtley to Coal House

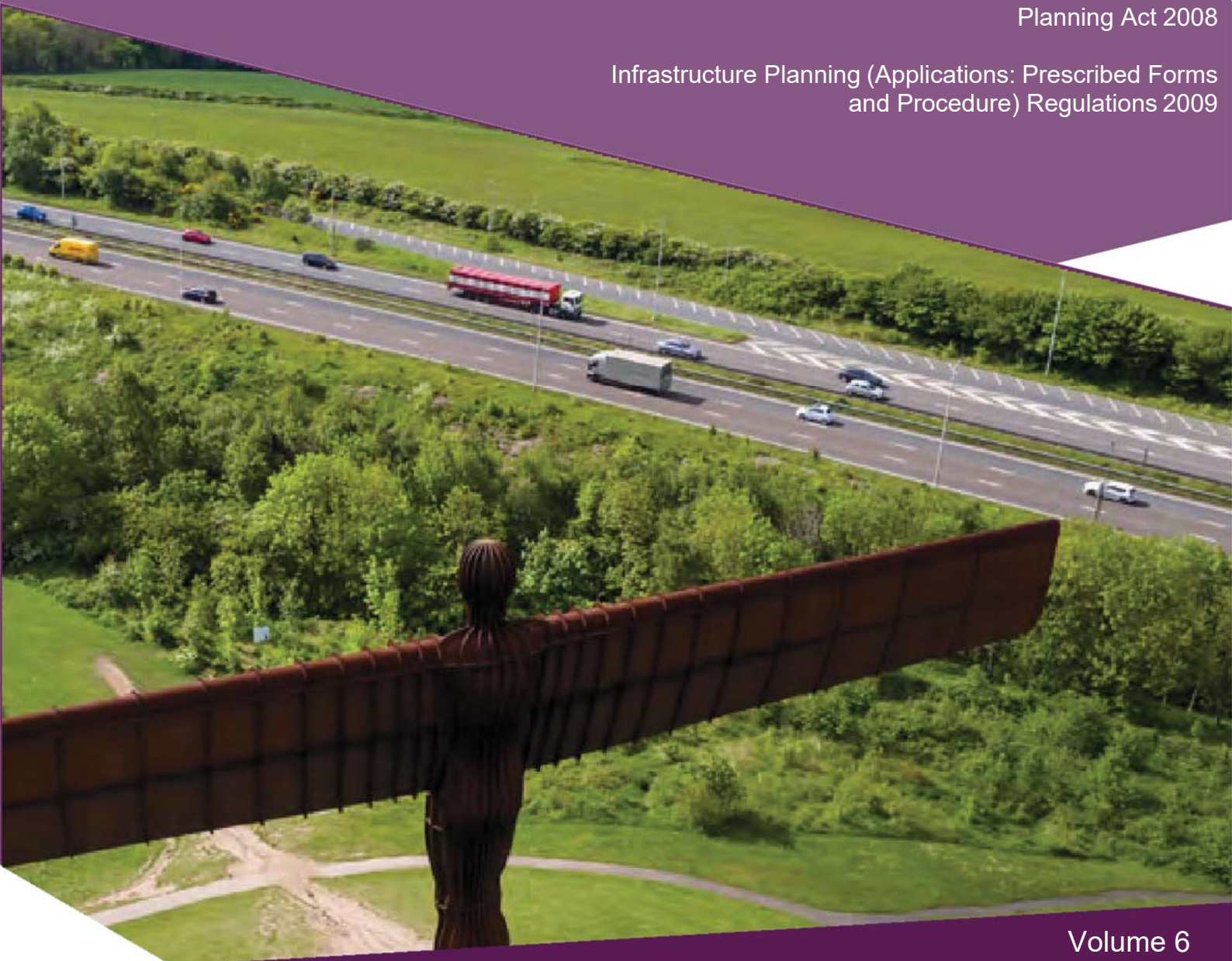
Scheme Number: TR010031

6.3 Environmental Statement – Appendix 11.14 Construction Vibration

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms
and Procedure) Regulations 2009



Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning
(Applications: Prescribed Forms and
Procedures) Regulations 2009**

**A1 Birtley to Coal House
Development Consent Order 20[xx]**

**Environmental Statement -
Appendix**

Regulation Reference:	APFP Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010031
Application Document Reference	TR010031/APP/6.3
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CONSTRUCTION VIBRATION

1.1. CONSTRUCTION VIBRATION CRITERIA AND DISTANCES

- 1.1.1. Groundborne vibration calculations have been undertaken based on the measurement data in BS 5228-2 (Ref. 11.23) and the empirical prediction procedures presented within this Standard as well as TRL RR 246: 1990: Traffic induced vibration in buildings (Ref. 11.31) (applicable to Heavy Vehicle induced vibration), and TRL Report 429: 2000: Groundborne vibration caused by mechanical construction works (Ref. 11.32) (as applicable to vibratory rollers). These calculations have been undertaken to determine the likely distance at which the adopted assessment criteria may be exceeded, based on a specified confidence limit (where applicable). Calculations have been undertaken for a sample of typical vibration operations with the results are presented in **Table 14-1** below.

Table 14-1 – Predicted groundborne vibration levels applicable to typical vibration generating construction activities

Operation	Confidence limit	Distance (m)	PPV (mms^{-1})	Effect level
Vibratory rollers – start and end ¹	95	60	0.3	LOAEL
	95	23	1.0	SOAEL
Vibratory rollers – steady state ¹	95	3.3	10.0	SOAEL
Piling – driven cast in place	95	215	0.3	LOAEL
	95	85	1.0	SOAEL
	95	15	10.0	
Rotary bored piling – augering	N/A	20	0.3	LOAEL
	N/A	6	1.0	SOAEL
	N/A	0.6	10.0	
Rotary bored piling – auger hitting base	N/A	45	0.3	LOAEL
	N/A	14	1.0	SOAEL
	N/A	1.4	10	
Rotary bored piling – driving casing	N/A	75	0.3	LOAEL
	N/A	23	1.0	SOAEL

Operation	Confidence limit	Distance (m)	PPV (mms^{-1})	Effect level
	N/A	2.3	10.0	
HGV's ²	N/A	50	0.3 ³	LOAEL
	N/A	17	1.0 ³	SOAEL
	N/A	2.5	10.0 ³	

¹ Assumes 1 roller with 2 drums,, 0.4mm amplitude, drum width of 1.3m, e.g. heavy-duty ride on roller

² Assumes maximum height/depth of surface defect of 50mm, maximum speed of 30km/h, and that the surface defect occurs at both wheels.

³ Where alluvium soils are present, higher vibration levels can be expected.

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