

**A66 Northern Trans-Pennine Project
TR010062**

**3.4 Environmental Statement
Appendix 12.2 Construction
Assessment Assumptions**

APFP Regulations 5(2)(a)

Planning Act 2008

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

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(Applications: Prescribed
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A66 Northern Trans-Pennine Project
Development Consent Order 202x

**3.4 ENVIRONMENTAL STATEMENT
APPENDIX 12.2 CONSTRUCTION ASSESSMENT
ASSUMPTIONS**

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12.2 Construction Assumptions

12.2.1 Introduction

- 12.2.1.1 Table 1: Construction plant details sets out the construction activities and associated plant assumed in the construction noise assessment. This information has been generated through professional experience and the location of each activity is based on the illustrative design and anticipated working areas and cross-referenced with the project description (See Chapter 2: The Project (Application Document 3.4) for scheme descriptions). The table also details the number of plant and the relative full power operating time (on-time) of plant as a percentage of the working day. The assumed sound pressure level at 10m from the construction plant has been taken from *British Standard (BS) 5228-12009+A1:2014 Code of practice for noise and vibration control on construction and open sites. Noise.* (BS 5228-1) (British Standards, 2014)¹.
- 12.2.1.2 Where construction plant does not have a sound pressure level provided in *BS 5228- 1*, data from manufacturers and provided by the construction consultants have been used.

¹ British Standard (2014) Code of practice for noise and vibration control on construction and open sites. Noise. (BS 5228-1)

Table 1: Construction plant details

Phase	Activity	Plant	Plant source*	Sound pressure level at 10m (dB L _{Aeq}) (unless otherwise stated)	Estimated number of each plant	Estimated percentage on-time
Phase 1 - compound	1a - site clearance	Tracked excavator	C.2.7	70	2	60
		Chainsaw	D.2.14	86	2	25
		Wood chipping machine	Manufacturer information ²	118 dB (sound power level)	1	25
		Wheeled loader	C.2.27	80	1	75
		Wagons	C.2.34	80	2	20
	1b - boundary fence	Petrol driven auger	Manufacturer information ³	100 dB (sound power level)	1	25
		Wheeled backhoe loader	C.2.8	68	1	50
		6t dumper	C.4.6	79	1	20
	1c - topsoil strip	Tracked excavator	C.4.65	71	1	75
		Wheeled loader	C.2.27	80	1	75
		Dump trucks / wagons	C.2.30	79	2	20
	1d - excavation	Tracked excavator	C.4.65	71	1	75
		D6 dozer	C.2.1	75	1	75
		Dump trucks / wagons	C.2.34	80	2	50
	1e - drainage	Tracked excavator	C.2.7	70	2	75

² Timberwolf (2021) TW 280TVGTR Wood Chipper Instruction Manual]

³ Stihl (2020) Stihl BT 131 Instruction Manual]

Phase	Activity	Plant	Plant source*	Sound pressure level at 10m (dB L _{Aeq}) (unless otherwise stated)	Estimated number of each plant	Estimated percentage on-time
	1f - subbase	6t dumper	C.2.30	79	1	75
		Tracked excavator	C.2.7	70	1	75
	1g - pavement/surfacing	Roller	C.5.19	80	2	75
		Asphalt paver (+tipper lorry)	C.5.31	77	3	50
	1h - operation and haul roads	Road roller	C.5.19	80	2	50
		Lorry	C.2.34	80	2	20
		Delivery trucks	C.2.34	80	3	20
		Forklift	D.7.93	76	1	20
Phase 2 - road construction	2a - boundary fence	Petrol driven auger	Manufacturer information ⁴	100 dB (sound power level)	1	25
		Wheeled backhoe loader	C.2.8	68	1	50
		6t dumper	C.2.30	79	1	20
	2b - topsoil strip	Tracked excavator	C.4.65	75	1	75
		Tracked loader	D.3.5	83	1	75
		Dump trucks / wagons	C.2.30	79	2	20
	2c - drainage - v ditch	Tracked excavator	C.4.65	75	2	75
		Dump trucks / wagons	C.2.30	79	2	75
	2d - earthworks	Tracked excavator	C.5.18	80	1	80
		Dump truck (tipping fill)	C.2.30	79	1	75

⁴ Stihl (2020) Stihl BT 131 Instruction Manual]

Phase	Activity	Plant	Plant source*	Sound pressure level at 10m (dB L _{Aeq}) (unless otherwise stated)	Estimated number of each plant	Estimated percentage on-time
		Bulldozer	C.5.14	86	1	80
		Vibratory roller	C.5.22	81	1	50
	2e - capping/subbase	Tracked excavator	C.5.18	80	1	80
		Wagons	C.2.34	80	4	75
		Bulldozer	C.5.14	86	1	80
		Vibratory roller	C.5.22	81	1	50
	2f - pavement/surfacing	Asphalt paver	C.5.31	77	1	50
		Wagons	C.2.34	80	4	70
		Road roller	C.5.19	80	2	50
	2g - road marking	Lorry - white liner	Other DCO application ⁵	74	2	20
	2h - variable road sign (VRS)	Hydraulic hammer rig	C.3.2	87	1	10
		Wagon	C.2.34	80	1	20
	2i - removal of current road	Wagons	C.2.34	80	2	20
		Road planer	C.5.7	82	1	80
	2j - surface water channel	Concrete wagons	C.4.20	80	2	80
		Slip form machine	D.8.20	81	1	20
	2k - drainage	Excavator	C.2.7	70	1	75

⁵ Planning inspectorate (2019) M25 junction 10/A3 Wisley interchange TR010030 6.5 Environmental Statement: Appendix 6.3 Construction noise plant]

Phase	Activity	Plant	Plant source*	Sound pressure level at 10m (dB L _{Aeq}) (unless otherwise stated)	Estimated number of each plant	Estimated percentage on-time
		6t dumper	C.2.30	79	1	50
		Wagons	C.2.34	80	2	20
Phase 3 - structures	3a - excavation - hard standing	Excavator	C.4.65	75	1	20
	3b - stone delivery	Wagons	C.2.34	80	2	20
	3c - concreting	Concrete pump	D.6.17	81	1	80
		Tracked crane	D.6.18	81	1	80
		Hand tools	C.4.71	85	3	25
		Concrete wagons	C.4.20	80	2	25
		Compressor	D.6.19	72	1	25
		Poker vibrators	D.6.20	81	1	25
		3d - sheet piling	Piling rigs (steel sheet piles)	C.3.8	88	2
	3e - continuous flight auger (CFA piling)	Piling rig	C.3.21	79	2	70
		Concrete pump / agitator	C.3.25	78	1	50
		Concrete delivery trucks	C.4.20	80	2	20
		Pile cropper	C.3.34	68	1	20
		Compressor	C.5.5	65	1	50
Breakers - peckers		C.5.1	88	2	20	
Excavator		C.3.23	68	3	50	
Phase 4 - demolition		Wheeled backhoe loader	C.2.8	95	1	30

Phase	Activity	Plant	Plant source*	Sound pressure level at 10m (dB L _{Aeq}) (unless otherwise stated)	Estimated number of each plant	Estimated percentage on-time
		Breaker mounted on wheeled backhoe	C.1 2	68	1	20
		Lorry	C.2 34	80 dB L _{Amax} at 10m	1	20
	Haul routes and onsite/offsite construction traffic movements	Articulated dump truck	C.9.22	89 dB L _{Amax} at 10m	See appendix 12.3	n/a
* Taken from BS 5228-1 unless stated otherwise						

12.2.1.3 A number of assumptions regarding the construction vibration assessment were also made. These assumptions are detailed in Table 2: Vibration Assumptions. Experience with direct measurement of piling vibration from vibration pile insertion suggests that the calculated level with a 50% risk of being exceeded is most often replicated by measurement.

Table 2: Vibration Assumptions

	Activity	Scaling Factor	Operation Status Factor	Number of vibratory drums	Maximum amplitude of drum vibration (mm)	Vibratory roller drum width (m)
Ground floor (1.5m)	Vibratory piling	60 (BS 5228-2 (British Standard, 2009) ⁶ Table E.2)	1.4 (BS 5228-2 Table D.11 M2)	N/A	N/A	N/A
	Vibratory compaction/ roller – Steady rate	75 (BS 5228-2 Table E.1)	N/A	1	1.7	2.2
	Vibratory compaction/roller – start up or rundown	65 (BS 5228-2 Table E.1)	N/A	1	1.7	2.2

12.2.1.4 The assumptions in Table 2: Vibration Assumptions have been used to calculate the PPV on the ground and at the base of the building. To determine levels of perceptible vibration on the first-floor dwellings, a magnification of x4 has been assumed based on previous experience and practice on other highway schemes.

⁶ British Standard (2009) Code of practice for noise and vibration control on construction and open sites. Vibration (BS 5228-2)