TECHNICAL NOTE

Transpennine Route Upgrade – Colne Viaduct and Colne Bridge Road

SUBJECT	PROJECT NO.	DATE
Noise & Vibration Assessment	100099912	19/01/2025

AUTHOR	DISTRIBUTION	REPRESENTING
David Gray	Revathi Balasubramanyam Jim Pearson	Bam Civils Network Rail

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1. Introduction

AtkinsRéalis has been commissioned by Network Rail to undertake construction noise predictions for works at Colne Viaduct and Colne Bridge Road, Huddersfield, HD5 0RH as part of the TransPennine Route Upgrade (TRU) project. These predictions shall be used to support an application for prior consent with Kirklees Council under Section 61 of the Control of Pollution Act 1974. This technical note provides a summary of the predictions of noise and vibration levels at nearby noise and vibration sensitive receptors (NSRs) and an assessment of the proposed works, undertaken in accordance with BS 5228:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites' (BS 5228).

Although there is some vibration generating equipment proposed for the Colne Bridge Road works, this is limited to compaction activities which are generally relatively short in duration. Additionally, the nearest NSR is located at a sufficient distance (approximately 70m) such that significant adverse effects are not expected. Consequently, vibration is scoped out of this assessment.

2. Guidance

The Noise Policy Statement for England (NPSE) sets out the long-term vision of Government noise policy: to promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.

The NPSE outlines three aims for the effective management and control of environmental, neighbour and neighbourhood noise:

- Avoid significant adverse impacts on health and quality of life;
- Mitigate and minimise adverse impacts on health and quality of life; and
- Where possible, contribute to the improvement of health and quality of life.

In its aims, the NPSE uses the key phrases 'significant adverse' and 'adverse'. The NPSE states in its explanatory note that there are two established concepts that are currently being applied to noise impacts, which are:

- NOEL – No Observed Effect Level. This is the level below which no effect can be detected; and
- LOAEL – Lowest Observed Adverse Effect Level. This is the level above which adverse effects on health and quality of life can be detected.

The NPSE then extends this concept to include:

- SOAEL – Significant Observed Adverse Effect Level. This is the level above which significant adverse effects on health and quality of life occur.

Although there are no statutory construction noise limits, BS 5228 Part 1 – Noise (BS 5228-1) provides example criteria for deriving appropriate construction noise significance criteria. The standard explains that the assessor needs to consider other Scheme-specific factors, such as the number of NSRs affected and the duration and character of the impact, to determine if there is a significant effect.

The NPSE notes that it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to vary for different noise sources, receptors, and times. Relevant SOAELs have been identified for the Scheme taking account of the sources of exposure and NSRs.

2.1 Construction Noise

The construction noise SOAEL is considered to be exceeded where the threshold values stated in Table 1 are exceeded based on the example criteria provided in Table E.2 of BS 5228:2009+A1:2014 'Code of practice for noise and vibration on construction and open sites. Part 1 – Noise' (BS 5228-1), or where the ambient sound level is exceeded by 5 dB, whichever is higher.

Table 1 Examples of time periods, averaging times and noise levels associated with the determination of eligibility for noise insulation

Day	Time (hours)	Averaging period, T	Noise insulation trigger level, dB $L_{Aeq,T}$
Mondays to Fridays	0700 – 0800	1 hour	70
	0800 – 1800	10 hours	75
	1800 – 1900	1 hour	70
	1900 – 2200	1 hour	65
	2200 – 0700	1 hour	55
Saturdays	0700 – 0800	1 hour	70
	0800 – 1300	5 hours	75
	1300 – 1400	1 hour	70
	1400 – 2200	1 hour	65
	2200 – 0700	1 hour	55
Sundays and Public Holidays	0700 – 2100	1 hour	65
	2100 – 0700	1 hour	55

[A)] All noise levels are predicted or measured at a point 1m in front of the most exposed of any windows and doors in any façade of any eligible dwelling

The following are considered significant time periods for SOAEL thresholds to be exceeded based on the guidance provided in BS 5228-1:

- A period of 10 or more days of working in any 15 consecutive days during construction; or
- For a total of 40 days or more in any 6 consecutive months during construction.

Significant adverse effects are deemed to occur at NSRs where both the SOAEL, as detailed in Table 1, and temporal criteria stated above are exceeded.

Network Rail will offer noise insulation or temporary rehousing if construction noise at NSRs is expected to be significant, in accordance with the criteria detailed above, and all reasonable measures to reduce noise have been incorporated.

NSRs considered for noise insulation or temporary rehousing will be regarded as ‘eligible’ NSRs. Those NSRs which are then deemed to be entitled to noise insulation or temporary rehousing, will be regarded as ‘qualifying’ NSRs. Calculations have been conducted to predict construction noise levels at all NSRs in the study area due to the works. NSRs that may experience significant adverse effects and would therefore qualify have been highlighted.

3. Works Details

3.1 Activities

The proposed construction works include the following activities:

- Colne Bridge Road:
    - Activity 1 - Enabling; break out and removal of reinforced slabs in Mamas and Papas
    - Activity 2 - Earthworks + slabs Mamas and Papas realignment
    - Activity 3 - Constructed Tensar wall
    - Activity 4 - Install cast in situ reinforced concrete works
    - Activity 5 - Install service diversions + drainage
    - Activity 6 - Road works – kerbs, street lights, signs
    - Activity 7 - Deconstruction of drystone wall closure to road
    - Activity 8 - Surfacing + lining
- Colne Viaduct:
    - Activity 9 - Install scaffolding
    - Activity 10 - Gritblast and painting works
    - Activity 11 - Steelwork repairs
    - Activity 12 - Remove scaffolding

The works are proposed over four phases between January and November 2026. Works programme details are provided in Section 3.4.

3.2 Works and Sensitive Receptor Locations

The sites are located both on and 300m to the east of Colne Bridge Road, Huddersfield, HD5 0RH, What3Words: ///loudly.stove.tower and ///plank.fled.seat. Figure 1 below shows the general works locations, together with the locations of the nearest NSRs.

Figure 1 Site location plan, phasing, and NSR locations

Table 2 outlines the NSR name and its distance to the centre of the closest proposed site activity.

Table 2 - NSR information and closest works

NSR ID	NSR name	Closest works	NSR type
NSR 1	Colne Bridge Road	80m	Residential
NSR 2	Dalton Bank Road/ Mill Lane/ Bog Green Lane	130m	Residential
NSR 3	Cooper Bridge Lock 16	130m	Residential
NSR 4	Paul Lane	280m	Residential

3.3 Construction Plant Data

It is understood that the following construction plant and associated source noise levels are required to undertake the proposed works. Table 3 demonstrates the amount of plant operating at any one time for each activity and its resultant noise level at 10m. The results in Table 3 results exclude mitigation, such as screening.

Table 3 - Construction plant data

Activity	Plant item	Number in use	BS 5228 ref	Sound level at 10m, dBA	% on-time	Resultant plant sound level at 10m, dBA	Activity sound level at 10m, dBA
Colne Bridge Road:							
Activity 1) Enabling works – Break out slabs	Tracked excavator (9T)	1	C.2.7	70	90.00	73	80
	Tracked Excavator (15T)	1	C.2.5	76	90.00	79	
	Hydraulic breaker	2	C.1.5	72	20.00	71	
	Mist Cannon	1	-	-	20.00		
	Tower lights	2	C.4.86	65	50.00	68	
Activity 2) Earthworks and slabs install	Tracked excavator (9T)	1	C.2.7	70	50.00	70	85
	Tracked Excavator (15T)	1	C.2.5	76	50.00	76	
	Wagons 20T	3	C.2.34	80	30.00	83	
	Concrete wagons	1	C.3.18	75	30.00	73	
	110v 3KVA generator	2	C.4.86	65	20.00	64	
	Poker	2	C.4.34	69	20.00	68	
	Battery power circular saw	1	C.4.72	79	20.00	75	
	Tower lights	2	C.4.86	65	50.00	68	
Activity 3) Tensar wall	Tracked excavator (9T)	1	C.2.7	70	90.00	73	86
	Tracked Excavator (15T)	2	C.2.5	76	90.00	82	
	Dumper	2	C.4.4	76	80.00	81	
	120 roller	2	C.2.38	73	70.00	77	
	Compactor plate	2	C.2.41	80	20.00	79	

Activity	Plant item	Number in use	BS 5228 ref	Sound level at 10m, dBA	% on-time	Resultant plant sound level at 10m, dBA	Activity sound level at 10m, dBA
Activity 4) Cast in situ reinforced concrete ground beams	Concrete wagon	2	C.3.18	75	50.00	78	81
	Tracked Excavator (15T)	1	C.2.5	76	40.00	75	
	110v 3KVA generator	2	C.4.86	65	20.00	64	
	Poker	2	C.4.34	69	20.00	68	
	Battery power circular saw	1	C.4.72	79	20.00	75	
Activity 5) Service diversions + drainage install	Tracked excavator (15T)	2	C.2.5	76	90.00	82	86
	Flat bed	2	C.4.53	77	30.00	78	
	Whacker plate	2	C.2.41	80	20.00	79	
	Tracked excavator (9T)	1	C.2.7	70	90.00	73	
	Hydraulic breaker	1	C.1.6	83	20.00	79	
	Concrete wagon	1	C.3.18	75	10.00	68	
	Floor Saw	1	C.4.72	79	10.00	72	
	Dumper	2	C.4.4	76	20.00	75	
Activity 6) Road works	Tracked excavator (9T)	2	C.2.7	70	90.00	76	85
	Flat bed	2	C.4.53	77	30.00	78	
	Whacker plate	2	C.2.41	80	20.00	79	
	Concrete wagon	2	C.3.18	75	50.00	78	
	Circular Saw	2	C.4.72	79	10.00	75	
	Roller 120	2	C.2.38	73	20.00	72	
	HIAB	1	C.4.53	77	30.00	75	

Activity	Plant item	Number in use	BS 5228 ref	Sound level at 10m, dBA	% on-time	Resultant plant sound level at 10m, dBA	Activity sound level at 10m, dBA
Activity 7) deconstruction of dry stone wall	Tracked excavator (15T)	2	C.2.5	76	90.00	82	85
	Hydraulic breaker	1	C.1.6	83	20.00	79	
	Dumper	2	C.4.4	76	60.00	80	
	Mist cannon	1	-	-	20.00		
Activity 8) Surfacing + lining	Paver	1	C.5.30	75	100.00	78	90
	20T wagons	4	C.2.34	80	100.00	89	
	3CX	1	C.5.11	73	20.00	69	
	Rollers	2	C.2.38	73	80.00	78	
	Lining wagon	1	C.4.53	77	10.00	70	
Colne Viaduct:							
Activity 9; Install scaffolding and encapsulate	Impact driver	4	C.4.69	85	20.00	87	87
	Telehandler	1	C.2.35	71	20.00	67	
	Heat guns	2	-	-	75.00		
	20Kva Generator	1	C.4.86	65	75.00	67	
	LED Diesel Lighting Tower	2	C.4.86	65	100.00	71	
Activity 10; Gritblast and painting works	Gritblast equipment	1	Library data	96	75.00	98	98
	Gritblast vacuum extraction equipment	1	-	-	75.00		
	Needle gun	1	Library data	87	10.00	80	
	Diesel Air compressor	1	C.5.5	65	75.00	67	

Activity	Plant item	Number in use	BS 5228 ref	Sound level at 10m, dBA	% on-time	Resultant plant sound level at 10m, dBA	Activity sound level at 10m, dBA
	LED Diesel Lighting Tower	2	C.4.86	65	100.00	71	
Activity 11; Steelwork repairs	20Kva Generator	1	C.4.86	65	75.00	67	83
	Pneumatic rivet busters	1	C.4.69	85	10.00	78	
	Grinders	2	C.4.93	80	10.00	76	
	TCB gun	1	C.4.69	85	10.00	78	
	Diesel Air compressor	1	C.5.5	65	75.00	67	
	Telehandler	1	C.2.35	71	10.00	64	
	LED Diesel Tower light	2	C.4.86	65	100.00	71	
Activity 12; Remove scaffolding	Impact driver	4	C.4.69	85	20.00	87	87
	Telehandler	1	C.2.35	71	20.00	67	
	LED Diesel Lighting Tower	2	C.4.86	65	100.00	71	

3.4 Works Programme

The proposed main activities are due to commence from January 2026 and complete in November 2026. Works are proposed during weekday daytime periods, extended hours during weekend daytime periods, and night-time during some weekends. Extended weekend hours would be as and when required, and not every week.

Activity	Time periods	Start date	End date
1	18:00 – 23:00 Friday night, weekend days and nights (24 hour continuous)	30/01/2026	01/02/2026
2	07:00 – 17:00 Monday – Friday days, weekend days and nights (24 hour continuous)	31/01/2026	15/02/2026
3	07:30 – 21:00 Monday – Saturday days (extended hours)	16/02/2026	25/04/2026
4	07:30 – 21:00 Monday – Saturday days (extended hours)	13/04/2026	22/05/2026
	07:30 – 18:00 Monday – Saturday days (extended hours)	22/06/2026	11/07/2026
5	06:00 – 22:00 Monday – Sunday days and nights (24 hour continuous working)	18/05/2026	28/06/2026
6	06:00 – 22:00 Monday – Sunday days (extended hours)	02/06/2026	15/08/2026
7	07:30 – 18:00 Monday – Saturday days (extended hours)	15/06/2026	04/07/2026
8	08:00 – 08:00 Monday – Sunday days and nights (24 hour continuous)	31/07/2026	15/08/2026
9	08:00 – 18:00 Monday – Friday 0800 - 1300 Saturday.	16/01/2026	28/02/2026
	Extended hours & back shift 13:00 – 18:00 Saturday 0800 - 1800 Sunday	17/01/2026	28/02/2026
10 and 11	08:00 – 18:00 Monday – Friday. 08:00 – 13:00 Saturday.	01/02/2026	01/11/2026

	Extended hours & back shift 13:00 – 18:00 Saturday 08:00 – 18:00 Sunday	01/02/2026 15/02/2026 01/03/2026 15/03/2026 29/03/2026 12/04/2026 26/04/2026 10/05/2026 24/05/2026 07/6/02026 21/06/2026 05/07/2026 19/07/2026 02/08/2026 16/08/2026 30/08/2026 13/09/2026 27/09/2026 11/10/2026 25/10/2026	01/02/2026 15/02/2026 01/03/2026 15/03/2026 29/03/2026 12/04/2026 26/04/2026 10/05/2026 24/05/2026 07/06/2026 21/06/2026 05/07/2026 19/07/2026 02/08/2026 16/08/2026 30/08/2026 13/09/2026 27/09/2026 11/10/2026 25/10/2026
12	08:00 – 18:00 Monday – Friday. 08:00 – 13:00 Saturday.	01/08/2026	26/10/2026
	Extended hours & back shift 13:00 – 18:00 Saturday 08:00 – 18:00 Sunday	02/08/2026 16/08/2026 30/08/2026 13/09/2026 27/09/2026 11/10/2026 25/10/2026	02/08/2026 16/08/2026 30/08/2026 13/09/2026 27/09/2026 11/10/2026 25/10/2026

4. Baseline Noise Levels

Baseline noise measurements were undertaken at Paul Lane (Easting/Northing: 418253/420380) as part of Environmental Statement – Volume 3, Appendix 8: Noise and vibration of the 'The Network Rail (Huddersfield to Westtown (Dewsbury) Improvements) Order'. This information is summarised below in Table 4 and is considered representative of the surrounding NSR locations.

Table 4 - Baseline noise survey summary

Monitoring Location	Time Period	Average $L_{Aeq,T}$ dB	Typical $L_{AFmax,15min}$, dB	Typical $L_{A10,15min}$, dB	Typical L_{A90min}, dB
L09 Paul Lane	Day (Weekday)	52	62	53	49
	Day (Weekend)	51			
	Night	49	61	49	44

Baseline surveys have not been undertaken at a location representative of properties on Colne Bridge Road to the north of the works. However, Defra noise mapping data[1] is available. It is not considered likely that daytime noise levels would warrant an increase in the daytime thresholds at this location. However, night-time noise levels are shown to be approximately 55 dB $L_{Aeq,8h}$, based on the Defra data. This would therefore warrant an increased threshold at this location, during night-time periods.

5. Resultant Noise Levels at Receptors

Noise levels have been predicted at the nearest NSRs in accordance with BS 5228-1. The results are provided in Table 5 assume all plant are operating simultaneously. The assessment assumes mitigation, such as screening and other best practicable means, is in place providing at 10 dB of attenuation.

The cumulative assessment includes consideration of nearby works associated with the Heaton Lodge compound, as per the existing Section 61 application for these works. The highest noise level works are assumed for the Heaton Lodge compound works, as a worst-case.

The SOAEL threshold during daytime for all NSRs is 75 $L_{Aeq,T}$, during weekends is 65 $L_{Aeq,T}$, and during the night is 55 dB $L_{Aeq,T}$, unless otherwise stated due to the pre-existing ambient noise level. The colour key used in Table 5 is shown below.

No Exceedance	Day Exceedance	Weekend or Night-time Exceedance	Day, Weekend, and Night-time Exceedance

[1] https://environment.data.gov.uk/explore/562c9d56-7c2d-4d42-83bb-578d6e97a517?download=true

Table 5 - Predicted noise levels at each NSR

Site	Activity	Working period	NSR 1	NSR 2	NSR 3	NSR 4
		SOAEL (Daytime):	*75*	*75*	*75*	*75*
		SOAEL (Weekend Daytime):	*65*	*65*	*65*	*65*
		SOAEL (Night-time)	*60**	*55*	*55*	*55*
Colne Bridge Road	1	Day and night	48	44	40	36
	2	Day and night	53	49	44	40
	3	Day	54	50	46	41
	4	Day	49	45	41	37
	5	Day and night	54	52	46	42
	6	Day	53	49	45	40
	7	Day	53	49	45	40
	8	Day and night	58	54	49	45
Colne Viaduct	9	Day	46	57	55	48
	10	Day	57	68	65	59
	11	Day	42	53	50	44
	12	Day	46	57	55	48
		Highest cumulative day	61	69	66	63

Site	Activity	Working period	NSR 1	NSR 2	NSR 3	NSR 4
		SOAEL (Daytime):	*75*	*75*	*75*	*75*
		SOAEL (Weekend Daytime):	*65*	*65*	*65*	*65*
		SOAEL (Night-time)	*60**	*55*	*55*	*55*
		Maximum number of exceedance in 15 consecutive days (1 limit)	0	4	4	0
		Maximum number of exceedance in six consecutive months (40 limit)	0	39	39	0
		Highest cumulative night	58	54	49	45

* Increased threshold due to ambient noise level of 55 dBA.

The assessment indicates that the SOAEL would not be exceeded at any NSR during night-time periods. During weekday and weekend daytime periods, exceedances may occur at NSRs 2 and 3. However, the duration of exceedances would not exceed the temporal criteria for significant effects, or the requirements for noise insulation or temporary rehousing.

The cumulative assessment also includes works associated with the Heaton Lodge compound. As such, no additional significant effects are expected due to the cumulative effect of the works in this location.

Although no significant effects are predicted, high noise levels during works may still have the potential to disturb nearby NSRs. A range of mitigation measures and Best Practicable Means to reduce construction noise as far as reasonably practicable are recommended in Section 6.

6. Noise Control Measures

In carrying out the works, Network Rail and its Contractors will ensure all reasonable steps will be implemented in the design and construction of the scheme so that noise from the construction does not exceed daytime and night-time SOAEL thresholds. Where it is not reasonably practicable to achieve this objective, noise from construction will be reduced as far as is reasonably practicable.

In developing the control measures, best practicable means (BPM), as defined in Section 72 of the Control of Pollution Act 1974 and Section 79 of the Environmental Protection Act 1990, will be applied during all construction works to minimise noise at neighbouring residential properties and other sensitive receptors. In doing so, due consideration will be given to the recommendations contained within BS 5228:2009+A1:2014, approved by the Secretary of State as the Code of Practice for noise and vibration control on construction and open sites.

6.1 Best Practicable Means

The following control measures will therefore be implemented in carrying out the construction works:

- All plant and equipment will comply with the noise limit and noise marking requirements prescribed by the “Noise Emission in the Environment by Equipment for Use Outdoors Regulations 2001” and the “Noise Emission in the Environment by Equipment for Use Outdoors (Amendment) Regulations 2005” implementing the EU Directives 2000/14/EC.

- All plant, equipment and noise control measures applied to plant and equipment shall be maintained in good and efficient working order and operated such that noise emissions are minimised as far as reasonably practicable. As far as reasonably practicable, any plant, equipment or items fitted with noise control equipment found to be defective will not be operated until repaired.

- All generators shall be super-silenced units. Where reasonably practicable, other fixed items of construction plant should be electrically powered in preference to diesel or petrol driven.

- Vehicles and mechanical plant employed for any activity associated with the construction works will, where reasonably practicable, be fitted with effective exhaust silencers and shall be maintained in good working order and operated in a manner such that noise emissions are controlled and limited as far as reasonably practicable.

- Machines in intermittent use will be shut down or throttled down to a minimum during periods between works.
- Whenever used, all percussion tools shall be fitted with appropriate mufflers or dampers of the type recommended by the manufacturers.
- Static noise emitting equipment operating continuously (generators, compressors etc) will be screened or housed within suitable acoustic enclosure, where appropriate.
- Noisy plant or equipment shall be sited as far away as possible from noise sensitive buildings. Wherever practicable, the use of barriers in the form of acoustic enclosures or temporary noise barriers shall be employed.
- All personnel on site will undergo site specific inductions and briefings, to include section 61 consent requirements and noise control measures. Where relevant, specific noise control measures will be incorporated into Works Package Plans.
- A programme of community liaison will be carried out, including notification of works and details of the complaints process.
- A programme of site inspections and noise monitoring will be carried out to assess whether BPM is being employed in the control noise, to investigate any noise complaints or incidents and compare actual construction noise levels against those predicted in the Section 61 consent application.
- Where feasible, works will screened from NSR using appropriate acoustic fencing, hoardings, or screens.
- Noise from reversing alarms from delivery and construction vehicles will be controlled and limited as far as possible through the following means:
    - Designing the site layout to limit the need for reversing vehicles;
    - The use of banksmen for traffic management at site entrance gates and within site footprint;
    - Reversing alarms incorporating directional sounders, broadband signals self-adjusting output sounders or flashing warning lights; and
    - Setting reversing alarms to the minimum output noise level required for health and safety compliance.

7. Conclusions

AtkinsRéalis has been commissioned by Network Rail to undertake construction noise predictions for works at Colne Viaduct and Colne Bridge Road, Huddersfield, HD5 0RH as part of the TransPennine Route Upgrade (TRU) project.

The assessment indicates that the SOAEL would not be exceeded at any NSR during night-time periods. During weekday and weekend daytime periods, exceedances may occur at NSRs 2 and 3. However, the duration of exceedances would not exceed the temporal criteria for significant effects, or the requirements for noise insulation or temporary rehousing.

The cumulative assessment also includes works associated with the Heaton Lodge compound. As such, no additional significant effects are expected due to the cumulative effect of the works in this location.

With the implementation of best practice working methods and mitigation measures described in this report, no significant effects are expected from the construction works giving no requirement for noise insulation or temporary rehousing.