The Sizewell C Project

6.8   Volume 7 Yoxford Roundabout and Other Highway Improvements
Chapter 4 Noise and Vibration
Appendices 4A - 4B

VOLUME 7, CHAPTER 4, APPENDIX 4A: ROAD TRAFFIC FLOW DATA

Contents

Tables

Plates

None provided.

Figures

None provided.

1. Road Traffic Flow Data

Table 1:1: 2028 Peak Construction – 18 hour flow data.

Link Number	18 hour flows - 2028	2028 Reference Case		2028 Typical Day Peak Construction		2028 Busiest Day Peak Construction		Speed (km/h)
	Location	Cars.	HDVs.	Cars.	HDVs.	Cars.	HDVs.	
13a	A12 (N)	14680	887	15249	1219	15189	1271	48
13b	B1122	4007	173	3980	458	3984	510	48
13c	A12 (middle)	15175	840	15171	822	15121	824	48
13d	A1120	4018	184	4565	188	4565	188	48
13e	A12 (S)	11747	704	11164	688	11116	688	48

Table 1:2: 2034 Operational Phase – 18 hour flow data.

Link Number	18 hour flows - 2034	2034 Reference Case		2034 Operational Phase		Speed (km/h)
	Location	Cars.	HDVs.	Cars.	HDVs.	
13a	A12 (N)	15543	901	15624	906	48
13b	B1122	4277	177	3943	123	48
13c	A12 (middle)	16128	859	15382	842	48
13d	A1120	4426	188	4469	190	48
13e	A12 (S)	12453	720	11604	702	48

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Table 1:3: Night time (8 hour) flow data breakdown.

13a	A12 (N)	Ref Case 2028		2028 Peak Construction Integrated (Typical)		2028 Peak Construction Integrated (Busiest)		Ref Case 2034		2034 Operational Phase	
	Hour	HDVs.	Cars.	HDVs.	Cars.	HDVs.	Cars.	HDVs.	Cars.	HDVs.	Cars.
	0000-0100	3	33	2	63	2	63	3	35	3	35
	0100-0200	2	22	1	31	1	31	2	23	2	23
	0200-0300	2	20	1	20	1	20	2	21	2	22
	0300-0400	2	25	2	25	2	25	2	26	2	27
	0400-0500	4	50	3	55	3	54	4	53	4	53
	0500-0600	12	154	20	188	19	187	12	162	12	163
	0600-0700	64	521	85	602	86	603	65	542	65	551
	2300-0000	7	86	29	93	28	93	7	91	7	91

13b	B1122	Ref Case 2028		2028 Peak Construction Integrated (Typical)		2028 Peak Construction Integrated (Busiest)		Ref Case 2034		2034 Operational Phase	
	Hour	HDVs.	Cars.	HDVs.	Cars.	HDVs.	Cars.	HDVs.	Cars.	HDVs.	Cars.
	0000-0100	0	9	0	18	0	18	0	10	0	9
	0100-0200	0	6	0	8	0	8	0	6	0	6
	0200-0300	0	6	0	5	0	5	0	6	0	5
	0300-0400	0	7	0	6	0	6	0	7	0	7
	0400-0500	1	14	0	14	0	14	1	15	0	13
	0500-0600	2	42	10	50	9	50	2	45	1	41
	0600-0700	7	250	31	257	31	257	7	256	7	252
	2300-0000	1	23	21	24	21	24	1	25	1	23

13c	A12 (middle)	Ref Case 2028		2028 Peak Construction Integrated (Typical)		2028 Peak Construction Integrated (Busiest)		Ref Case 2034		2034 Operational Phase	
	Hour	HDVs.	Cars.	HDVs.	Cars.	HDVs.	Cars.	HDVs.	Cars.	HDVs.	Cars.
	0000-0100	3	31	2	57	2	57	3	33	3	32
	0100-0200	2	20	2	27	2	27	2	22	2	21
	0200-0300	2	19	2	18	2	18	2	20	2	19
	0300-0400	2	24	2	22	2	22	2	25	2	24

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13c

A12 (middle)	Ref Case 2028		2028 Peak Construction Integrated (Typical)		2028 Peak Construction Integrated (Busiest)		Ref Case 2034		2034 Operational Phase	
0400-0500	4	47	4	49	4	48	4	50	4	48
0500-0600	12	145	11	168	11	168	12	154	12	147
0600-0700	66	435	65	479	65	480	68	456	67	440
2300-0000	7	81	6	83	6	83	7	86	7	82

13d

A1120	Ref Case 2028		2028 Peak Construction Integrated (Typical)		2028 Peak Construction Integrated (Busiest)		Ref Case 2034		2034 Operational Phase	
Hour	HDVs.	Cars.	HDVs.	Cars.	HDVs.	Cars.	HDVs.	Cars.	HDVs.	Cars.
0000-0100	0	8	0	22	0	22	0	8	0	8
0100-0200	0	5	0	9	0	9	0	5	0	5
0200-0300	0	5	0	5	0	5	0	5	0	5
0300-0400	0	6	0	6	0	6	0	6	0	6
0400-0500	0	12	1	14	1	14	1	13	1	13
0500-0600	2	36	2	54	2	54	2	39	2	39
0600-0700	7	112	7	150	7	150	7	117	7	117
2300-0000	1	20	1	24	1	24	1	22	1	22

13e

A12 (S)	Ref Case 2028		2028 Peak Construction Integrated (Typical)		2028 Peak Construction Integrated (Busiest)		Ref Case 2034		2034 Operational Phase	
Hour	HDVs.	Cars.	HDVs.	Cars.	HDVs.	Cars.	HDVs.	Cars.	HDVs.	Cars.
0000-0100	2	27	2	38	2	38	2	28	2	26
0100-0200	1	17	1	20	1	20	1	18	1	17
0200-0300	1	16	1	15	1	15	1	17	1	16
0300-0400	2	20	1	19	1	19	2	21	2	20
0400-0500	3	40	3	39	3	39	3	43	3	40
0500-0600	9	123	9	130	9	129	10	130	9	122
0600-0700	54	363	53	373	53	374	57	383	55	361
2300-0000	5	69	5	68	5	67	5	73	5	68

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VOLUME 7, CHAPTER 4, APPENDIX 4B: CONSTRUCTION ASSUMPTIONS

Contents

Tables

Plates

None provided.

Figures

None provided.

1. Construction assumptions

1.1.1 **Table 1.1** provides details on the assumed construction activities, source levels and on times for works at both Yoxford roundabout and the highway improvement at the A12 / A144 junction (Bramfield).

Table 1.1: Assumed activities and noise sources for each phase

Activity	Key noise sources	Sound power level, dB, L_{WA}	On time, %
Site set up and Clearance	Lorry loader crane HIAB	104	25
	Diesel / petrol generators	97	100
	360 Wheeled / tracked excavators	107	70
	180 Backhoe loaders	107	50
	Dump trucks	106	70
	Telehandlers	107	50
	Chainsaws and brush-cutters	115	17
	Wood chippers	121	17
	Road sweeper / gully sucker	107	50
	Vibratory tamping rollers	111	50
Earthworks	Tracked dozers	108	50
	Wheeled loading shovels	107	50
	360 Tracked excavators	110	70
	Motor graders / scrapers	108	50
	Articulated haulers/dump trucks	108	50
	Vibratory tamping rollers	111	50
	Road tipper waggons	107	50
Drainage	Lorry loader crane HIAB	104	25
	360 Tracked excavators	110	70
	180 Backhoe loaders	107	50
	Dump trucks	106	70
	Wheeled loading shovels	107	50
	Concrete mixer trucks	107	50
	Trench rammers	91	25
Pavements	Cold planer/milling machines	104	70
	Motor graders / dozers	108	50
	Wheeled loading shovels	107	50
	Dump trucks	108	50

Activity	Key noise sources	Sound power level, dB, L_{WA}	On time, %
	360 Tracked excavators	110	70
	180 Backhoe loaders	107	50
	Asphalt pavers (and tipper lorries)	109	70
	Concrete mixer trucks	107	70
	Compressors and pneumatic hand tools	118	17
	Deadweight / vibrating rollers	111	50
	Vibrating plate compactors	110	25
	Road sweeper	107	70
Kerbs, Footways and Paved Areas	Lorry loader crane HIAB	104	25
	Telehandlers	107	50
	Cold planer/milling machines	104	70
	Concrete mixer trucks	107	70
	Compressors and pneumatic hand tools	118	17
	Mini asphalt pavers (and tipper lorries)	109	70
	Deadweight / vibrating rollers	111	50
	Vibrating plate compactors	110	25
Bridges and Civil Structures	Lorry loader crane HIAB	104	25
	Telehandlers	107	50
	360 Tracked excavators	110	70
	Concrete mixer trucks	107	70
	Concrete pumps	108	50
	Concrete compaction plant	96	25
	Dump trucks	108	50
	Deadweight / vibrating rollers	111	50
	Compressors and pneumatic hand tools	118	17
	Mobile all terrain cranes	101	50
	Mobile elevating work platforms - vehicle mounted or self-propelled	104	25
	Continuous flight augering (CFA) / bored piles	108	50
Road Restraints	Lorry loader crane HIAB	104	25
	Telehandler	107	50
	Concrete mixer trucks	107	70
	Mini excavator	100	50

Activity	Key noise sources	Sound power level, dB, L_{WA}	On time, %
	180 Backhoe loaders	107	50
Fencing	Lorry loader crane HIAB	104	25
	Telehandler	107	50
	180 Backhoe loaders	107	50
	Concrete mixer trucks	107	70
Traffic signs	Lorry loader crane HIAB	104	25
	Telehandler	107	50
	180 Backhoe loaders	107	50
	Mini excavator	100	50
	Mobile elevating work platforms - vehicle mounted or self-propelled	104	25
Road Lighting	Lorry loader crane HIAB	104	25
	Mini excavator	100	50
	Small crane / backhoe	104	25
	Telehandler	107	50
	Mobile elevating work platforms - vehicle mounted or self-propelled	104	25

1.2   Construction noise calculations

a)   Yoxford roundabout

1.2.2   The construction of the Yoxford Roundabout has been divided into two phases comprising preparatory works and main phase construction work. Each phase would contain the following activities:

- Preparatory works: site set up and clearance, including trees and hedgerows, the erection of temporary fencing on land required for construction and the creation of alternative access arrangements and rights of way, setting up of the temporary contractor compounds including security, welfare facilities, and temporary utilities; and

- Construction Works: earthworks, road construction and surfacing, utility and drainage installation, construction of pavements, kerbs, footways and paved areas, installation of permanent fencing, road signs and marking, and road lighting, permanent connections to existing road networks, and landscaping.

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1.2.3   **Table 1.2** shows details of the calculations carried out to predict noise levels during construction for the preparation and main construction phases.

1.2.4   The predictions in **Table 1.2** show sound levels forecast to arise during the use of chainsaws/chipper and chainsaw for and during vegetation clearance and during the formation of the Temporary Contractors compound (TCC) using plant such as bulldozer and roller.

1.2.5   Over the construction period, each receptor location would experience noise from Earth-moving, Drainage and Pavements. Pavements are predicted to produce the highest sound emission of these activities. The main phase construction work has therefore been calculated for the noisiest of the main phase works located at the notional centre of the works red-line site boundary, being approximately 30m due south of the proposed new roundabout centre.

1.2.6   Predictions have been made of levels during the construction of contractor compound at the notional centre of the compound. These are labelled as "edge" and "centre" in the **Table 1.2**, respectively.

1.2.7   Notations. 'r' is radial distance, source to receptor. A_r is attenuation for radial distance. A_g, A_a, A_{met}, A_b are attenuation for ground; air; meteorological effects and barrier, respectively.

1.2.8   The source values in **Table 1.2** have been derived from activities, source levels and on times shown in **Table 1.1**. For simplicity, these have been expressed as a single activity level at a reference distance of 40m.

Table 1.2: Construction noise calculations for Yoxford roundabout

Receptor 9 Sunnypatch	Vegetation clearance	TCC	Main construction phase
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	40m	60m	200m
A_r	0	4	14
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$			
Predicted $L_{Aeq,T}$, dB	70/74	70	65
Receptor 14 The Old Barn	**Vegetation clearance**	**TCC**	**Main construction phase**
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	65m	100m	240m
A_r	4	8	16

$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$			
Predicted $L_{Aeq\,T}$, dB	66/70	66	63
Receptor 15 Rookery Cottages	**Vegetation clearance**	**TCC**	**Main construction phase**
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	70m	100m	220m
A_r	5	8	15
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$		$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$	1
Predicted $L_{Aeq,\,T}$, dB	65/69	65	63
Receptor 8 The Cottage	**Vegetation clearance**	**TCC**	**Main construction phase**
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	30m	60m	160m
A_r	3	4	12
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$			
Predicted $L_{Aeq,\,T}$, dB	73/77	70	67
Receptor 7 Rookery Lodge	**Vegetation clearance**	**TCC**	**Main construction phase**
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	50m	210m	80m
A_r	2	14	6
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$			
Predicted $L_{Aeq,\,T}$, dB	68/72	60	73
Receptor 6 Pinn's Piece	**Vegetation clearance**	**TCC**	**Main construction phase**
Operations	Operations	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	70m	230m	100m

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A_r	5	15	8
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$			
Predicted $L_{Aeq, T}$, dB	65/69	59	71
Receptor 5 Sans Souci	**Vegetation clearance**	**TCC**	**Main construction phase**
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	90m	250m	120m
A_r	7	16	10
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$			
Predicted $L_{Aeq, T}$, dB	63/67	58	69
Receptor 4 White House / White Lodge	**Vegetation clearance**	**TCC**	**Main construction phase**
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	120m	290m	150m
A_r	10	17	11
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$			
Predicted $L_{Aeq\ T}$, dB	60/64	57	68
Receptor 13 White Hse Cotts & Medway	**Vegetation clearance**	**TCC**	**Main construction phase**
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	160m	320m	190m
A_r	12	18	14
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$			
Predicted $L_{Aeq, T}$, dB	58/62	56	65
Receptors 12 Holly House and 11 Tinkers	**Vegetation clearance**	**TCC**	**Main construction phase**
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	180m	350m	210m
A_r	13	19	14
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$			
Predicted $L_{Aeq, T}$, dB	57/61	55	65

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Receptor 16 Wormley Bury, Rosewood, Southern	Vegetation clearance	TCC	Main construction phase
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	200m	370m	230m
A_r	14	19	15
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$			
Predicted $L_{Aeq\,T}$, dB	56/60	55	64
Receptor 17 King's Head, PH	**Vegetation clearance**	**TCC**	**Main construction phase**
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	220m	400m	260m
A_r	15	20	16
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$			
Predicted $L_{Aeq,\,T}$, dB	55/59	54	63
Receptor 18 Frith House	**Vegetation clearance**	**TCC**	**Main construction phase**
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	150m	300m	200m
A_r	11	18	14
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$		1	1
Predicted $L_{Aeq\,T}$, dB	59/63	55	64
Receptor 19 Pinns Cottage	**Vegetation clearance**	**TCC**	**Main construction phase**
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	200m	350m	250m
A_r	14	19	16
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$		1	1
Predicted $L_{Aeq,\,T}$, dB	56/60	54	62
Receptor 20 Garden Cottage and Clock House	**Vegetation clearance**	**TCC**	**Main construction phase**
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	320m	350m	450m

A_r	18	19	21
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$	3	3	3
Predicted $L_{Aeq, T}$, dB	49/53	52	55
Receptor 21 Cavan Cottage	**Vegetation clearance**	**TCC**	**Main construction phase**
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	220m	400m	250m
A_r	15	20	16
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$		2	1
Predicted $L_{Aeq, T}$, dB	55/59	52	62
Receptor 10 The Limes	**Vegetation clearance**	**TCC**	**Main construction phase**
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	180m	350m	200m
A_r	13	19	14
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$		1	
Predicted $L_{Aeq, T}$, dB	57/61	54	65
Receptor 1 Woodland Cottages	**Vegetation clearance**	**TCC**	**Main construction phase**
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	120m	300m	150m
A_r	10	18	11
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$		1	
Predicted $L_{Aeq, T}$, dB	60/64	55	68
Receptor 2 Satis House (hotel)	**Vegetation clearance**	**TCC**	**Main construction phase**
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	60m	250m	100m
A_r	4	16	8
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$			
Predicted $L_{Aeq, T}$, dB	66/70	59	71

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Receptor 3 Satis Coach House	Vegetation clearance	TCC	Main construction phase
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	70m	250m	120m
A_r	5	16	10
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$		1	
Predicted $L_{Aeq, T}$, dB	65/69	57	69

Receptor 22 Manger Cottage	Vegetation clearance	TCC	Main construction phase
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	120m	300m	150m
A_r	10	18	11
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$		1	
Predicted $L_{Aeq, T}$, dB	60/64	55	68

Receptor 23 Meadowbarn	Vegetation clearance	TCC	Main construction phase
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	200m	350m	350m
A_r	14	19	19
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$		3	3
Predicted $L_{Aeq, T}$, dB	56/60	52	57

Receptor 24 Hopton Yard, east of Old Barn	Vegetation clearance	TCC	Main construction phase
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	100m	140m	270m
A_r	8	11	17
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$			

Predicted $L_{Aeq, T}$, dB	62/66	63	62
Receptor 25 Honeycroft	**Vegetation clearance**	**TCC**	**Main construction phase**
Operations	Saw/chip	Formation	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	74	79
r, typical, m	250m	290m	400m
A_r	16	17	20
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$			2
Predicted $L_{Aeq, T}$, dB	54/58	57	57

b) Highway improvement at the A12 / A144 junction

1.2.9 Initial preparatory works may involve the clearance of some vegetation at the junction. These works would use a chainsaw and chipper. The sound emissions of such plant can be high but of very brief duration, potentially no more than one or two days.

1.2.10 The main construction phase would involve some breaking of the existing road surfaces and kerbs would be expected for the widened A12. Other plant involved in the road-widening scheme would also include small excavation and handling machines, mini-asphalt and road-rolling equipment.

1.2.11 The full complement of plant would operate in a phased manner such that they would not combine at the same work point at the same time. Noise has been predicted for the on the likely higher sound output plant operating in a notional central location of the junction. The period over which the road widening works would feature plant operating at this level would not be expected to exceed 10 consecutive days in 15 or 40 days in total over 6 months.

1.2.12 Predicted noise levels for these two phases as shown in **Table 1.3**, using the same notation as **Table 1.2**. The source values in **Table 1.3** have been derived from activities, source levels and on times shown in **Table 1.1**. For simplicity, these have been expressed as a single activity level at a reference distance of 40m.

Table 1.3: Construction noise calculations for A12 / A144 junction highway improvement

Receptor 1	Vegetation clearance	Main construction phase
Operations	Saw/chip	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	71
r, typical, m	40m	25m
A_r	0	+4

$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$		
Predicted $L_{Aeq, T}$, dB	70/74	75
Receptor 2	**Vegetation clearance**	**Main construction phase**
Operations	Saw/chip	Pavements
Source Value: $L_{Aeq,t}$ @ 40m, dB	70/74	71
r, typical, m	50m	70m
A_r	2	5
$A_g + A_a + A_{met}$ or $A_b + A_a + A_{met}$		
Predicted $L_{Aeq, T}$, dB	68/72	66

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