

20th March 2017

North Littlehampton -Fitzalan Link Road Condition 18

Modelling results

Following a change in speed limit from 30 to 40mph and the introduction of using a pervious road surface table 1 below shows the different in noise levels between those of the august 2016 assessment following alterations to the barrier.

Table 1 Difference between 2016 assessment (30mph, normal road surface) and the March 2017 Assessment (40mph, pervious road surface).

Location	Traffic Noise With Development, Only 2032 (March 2017 (40mph) With Low Noise Road surface.) (L_{A10,18hr} dB(A))	Traffic Noise With Development, Only 2032 (August 2016 (30mph) (L_{A10,18hr} dB(A))	Difference between 2016 and 2017 assessments (dB(A))
TR01	55.9	56.3	-0.4
TR02	59.1	59.5	-0.4
TR03	56.3	55.3	1.0
TR04	54.7	55.2	-0.5
TR05	54.3	52.8	1.5
TR06	51.2	49.9	1.3
TR07	53.8	52.6	1.2
TR08	51.6	50.8	0.8
TR09	52.1	52.1	0.0
TR10	51.8	51.8	0.0
TR11	50.4	50.9	-0.5
TR12	50.3	50.8	-0.5
TR13	49.7	50.2	-0.5
TR14	53.1	53.4	-0.3
TR15	51.6	51.6	0.0
TR16	51.3	50.5	0.8
TR17	49.4	48.8	0.6
TR18	47.0	47.4	-0.4
TR19	52.0	52.0	0.0
TR20	49.9	50.8	-0.9
TR21	52.3	52.2	0.1
TR22	50.1	50.3	-0.2
TR23	49.9	50.1	-0.2
TR24	49.9	51.0	-1.1
TR25	52.2	52.7	-0.5
TR26	47.7	48.4	-0.7
TR27	49.4	50.1	-0.7
TR28	52.0	52.9	-0.9
TR29	48.8	49.9	-1.1
TR30	48.3	49.2	-0.9
TR31	48.2	49.2	-1.0
TR32	54.2	54.0	0.2

Location	Traffic Noise With Development, Only 2032 (March 2017 (40mph) With Low Noise Road surface.) ($L_{A10,18hr}$ dB(A))	Traffic Noise With Development, Only 2032 (August 2016 (30mph) ($L_{A10,18hr}$ dB(A))	Difference between 2016 and 2017 assessments (dB(A))
TR33	49.6	51.4	-1.8
TR34	49.9	51.0	-1.1
TR35	55.9	56.1	-0.2
TR36	54.6	54.9	-0.3
TR37	50.3	50.4	-0.1
TR38	58.3	58.4	-0.1

The table above shows that the results don't vary significantly with noise levels at some receptors increasing by up to 1.5 dB and other decreasing by up to 1.8 dB due to the change in speed limits and road surface.

With these new changes in place the results for the long-term assessment can be found in table 2 below.

Table 2 Difference Between Baseline Traffic Flows (2013) and With Bypass Scenario (with Barrier) (2032)

Location	Traffic Noise Without Development 2013 ($L_{A10,18hr}$ dB(A))	Traffic Noise With Development Only 2032 ($L_{A10,18hr}$ dB(A))	Difference between with and without development scenarios (dB(A))
TR01	55.6	55.9	0.3
TR02	57.8	59.1	1.3
TR03	55.0	56.3	1.3
TR04	51.3	54.7	3.4
TR05	53.0	54.3	1.3
TR06	50.9	51.2	0.3
TR07	51.2	53.8	2.6
TR08	49.9	51.6	1.7
TR09	48.0	52.1	4.1
TR10	48.0	51.8	3.8
TR11	47.7	50.4	2.7
TR12	47.1	50.3	3.2
TR13	46.7	49.7	3.0
TR14	50.6	53.1	2.5
TR15	46.4	51.6	5.2
TR16	46.3	51.3	5.0
TR17	45.9	49.4	3.5
TR18	43.3	47.0	3.7
TR19	47.4	52.0	4.6
TR20	46.2	49.9	3.7
TR21	46.0	52.3	6.3
TR22	44.7	50.1	5.4
TR23	44.4	49.9	5.5
TR24	45.1	49.9	4.8
TR25	45.4	52.2	6.8

Location	Traffic Noise Without Development 2013 ($L_{A10,18hr}$ dB(A))	Traffic Noise With Development Only 2032 ($L_{A10,18hr}$ dB(A))	Difference between with and without development scenarios (dB(A))
TR26	43.7	47.7	4.0
TR27	43.7	49.4	5.7
TR28	45.1	52.0	6.9
TR29	43.1	48.8	5.7
TR30	42.7	48.3	5.6
TR31	42.7	48.2	5.5
TR32	49.3	54.2	4.9
TR33	47.8	49.6	1.8
TR34	48.7	49.9	1.2
TR35	54.6	55.9	1.3
TR36	52.9	54.6	1.7
TR37	51.4	50.3	-1.1
TR38	54.9	58.3	3.4

Table 2 shows that with the inclusion of the 3.5m high solid barrier when the differences between the baseline 2013 flows and the 2032 'with' development scenario are compared with the long term noise change criteria given in Table 2.2 of the noise report, all of the representative receptors would be considered to have a slight or moderate adverse impact.

Due to the presence of a new noise source where previously there wasn't one, 11 receptors are marginally within the 'moderate' effect level however noise levels at all of these properties are predicted to be less than 55 dB, the BS 8233:2014 recommended upper limit for private external amenity areas.

Table 3 below shows the long-term traffic noise assessment with the speeds of 40mph and a standard HRA road surface.

Table 3 Difference Between Baseline Traffic Flows (2013) and With Bypass Scenario (with Barrier) (2032) (40mph and Normal Road Surface)

Location	Traffic Noise Without Development 2013 ($L_{A10,18hr}$ dB(A))	Traffic Noise With Development Only 2032 ($L_{A10,18hr}$ dB(A))	Difference between with and without development scenarios (dB(A))
TR01	55.6	56.9	1.3
TR02	57.8	60.0	2.2
TR03	55.0	58.2	3.2
TR04	51.3	56.1	4.8
TR05	53.0	56.2	3.2
TR06	50.9	53.7	2.8
TR07	51.2	55.9	4.7
TR08	49.9	54.3	4.4
TR09	48.0	54.9	6.9

Location	Traffic Noise Without Development 2013 ($L_{A10,18hr}$ dB(A))	Traffic Noise With Development Only 2032 ($L_{A10,18hr}$ dB(A))	Difference between with and without development scenarios (dB(A))
TR10	48.0	54.3	6.3
TR11	47.7	53.0	5.3
TR12	47.1	53.0	5.9
TR13	46.7	52.4	5.7
TR14	50.6	54.4	3.8
TR15	46.4	54.1	7.7
TR16	46.3	54.0	7.7
TR17	45.9	51.8	5.9
TR18	43.3	49.1	5.8
TR19	47.4	54.3	6.9
TR20	46.2	52.7	6.5
TR21	46.0	54.9	8.9
TR22	44.7	52.9	8.2
TR23	44.4	52.9	8.5
TR24	45.1	52.9	7.8
TR25	45.4	55.1	9.7
TR26	43.7	49.7	6.0
TR27	43.7	52.0	8.3
TR28	45.1	55.1	10.0
TR29	43.1	51.7	8.6
TR30	42.7	51.1	8.4
TR31	42.7	50.9	8.2
TR32	49.3	56.5	7.2
TR33	47.8	52.6	4.8
TR34	48.7	52.3	3.6
TR35	54.6	56.0	1.4
TR36	52.9	55.1	2.2
TR37	51.4	50.5	-0.9
TR38	54.9	58.3	3.4

Table 3 shows that with the inclusion of the 3.5m high solid barrier with speeds of 40mph and a standard HRA road surface, when the differences between the baseline 2013 flows and the 2032 'with' development scenario are compared with the long-term noise change criteria given in Table 2.2 of the noise report, all of the representative receptors would be considered to have be within the slight to significant adverse effect levels.

Due to the presence of a new noise source where previously there wasn't one, 23 receptors are within the 'moderate' effect level however noise levels at all of these properties but TR25, TR28 and TR32 are predicted to be less than 55 dB, the BS 8233:2014 recommended upper limit for private external amenity areas.

Table 4 below presents that difference in noise level between the pervious road surface and standard HRA road surface, the results show that the pervious road will reduce noise levels by up to 3.1dB in some areas and noise attributable to the scheme would be within the slight or moderate effect levels at all properties.

Table 4 Difference Between with Bypass Scenario (with Barrier) (2032) standard road surface and pervious road surface

Location	Traffic Noise With Development Only 2032 ($L_{A10,18hr}$ dB(A)) Normal Road Surface	Traffic Noise With Development Only 2032 ($L_{A10,18hr}$ dB(A)) Pervious Road Surface	Difference between with and without development scenarios (dB(A))
TR01	56.9	55.9	-1.0
TR02	60.0	59.1	-0.9
TR03	58.2	56.3	-1.9
TR04	56.1	54.7	-1.4
TR05	56.2	54.3	-1.9
TR06	53.7	51.2	-2.5
TR07	55.9	53.8	-2.1
TR08	54.3	51.6	-2.7
TR09	54.9	52.1	-2.8
TR10	54.3	51.8	-2.5
TR11	53.0	50.4	-2.6
TR12	53.0	50.3	-2.7
TR13	52.4	49.7	-2.7
TR14	54.4	53.1	-1.3
TR15	54.1	51.6	-2.5
TR16	54.0	51.3	-2.7
TR17	51.8	49.4	-2.4
TR18	49.1	47.0	-2.1
TR19	54.3	52.0	-2.3
TR20	52.7	49.9	-2.8
TR21	54.9	52.3	-2.6
TR22	52.9	50.1	-2.8
TR23	52.9	49.9	-3.0
TR24	52.9	49.9	-3.0
TR25	55.1	52.2	-2.9
TR26	49.7	47.7	-2.0
TR27	52.0	49.4	-2.6
TR28	55.1	52.0	-3.1
TR29	51.7	48.8	-2.9
TR30	51.1	48.3	-2.8
TR31	50.9	48.2	-2.7
TR32	56.5	54.2	-2.3
TR33	52.6	49.6	-3.0
TR34	52.3	49.9	-2.4
TR35	56.0	55.9	-0.1

Location	Traffic Noise With Development Only 2032 ($L_{A10,18hr}$ dB(A)) Normal Road Surface	Traffic Noise With Development Only 2032 ($L_{A10,18hr}$ dB(A)) Pervious Road Surface	Difference between with and without development scenarios (dB(A))
TR36	55.1	54.6	-0.5
TR37	50.5	50.3	-0.2
TR38	58.3	58.3	0.0

Table 5 below presents that difference in garden noise level between the pervious road surface (40mph) and standard HRA road surface (30mph), the results show that the pervious road will reduce noise levels by up to 1.4dB in some areas.

Table 5 Difference Between with Bypass Scenario (with Barrier) (2032) standard road surface and pervious road surface Garden Noise

Ref.	Traffic Noise levels DS 2032 – With 3.5m High Acoustic Barrier (Normal Road) (dB $L_{Aeq 16h}$)	Traffic Noise levels DS 2032 – With 3.5m High Acoustic Barrier (Pervious Road Surface) (dB $L_{Aeq 16h}$)	Difference between with and without development scenarios (dB(A))
TR01	52.9	54.0	1.1
TR02	49.8	49.3	-0.5
TR03	49.5	48.9	-0.6
TR04	50.8	50.9	0.1
TR05	48.5	47.9	-0.6
TR06	46.9	46.0	-0.9
TR07	48.5	47.6	-0.9
TR08	48.4	47.7	-0.7
TR09	48.5	47.5	-1.0
TR10	48.7	47.7	-1.0
TR11	46.5	45.3	-1.2
TR12	46.9	45.8	-1.1
TR13	47.2	46.1	-1.1
TR14	49.1	49.4	0.3
TR15	48.4	47.6	-0.8
TR16	46.7	45.6	-1.1
TR17	45.0	44.0	-1.0
TR18	44.7	43.8	-0.9
TR19	49.0	47.9	-1.1
TR20	49.1	48.0	-1.1
TR21	49.1	47.9	-1.2
TR22	46.8	45.5	-1.3
TR23	47.7	46.3	-1.4
TR24	48.9	47.9	-1.0
TR25	49.1	48.1	-1.0
TR26	45.6	44.8	-0.8
TR27	46.8	45.6	-1.2
TR28	48.2	47.0	-1.2

Ref.	Traffic Noise levels DS 2032 – With 3.5m High Acoustic Barrier (Normal Road) (dB L _{Aeq} 16h)	Traffic Noise levels DS 2032 – With 3.5m High Acoustic Barrier (Pervious Road Surface) (dB L _{Aeq} 16h)	Difference between with and without development scenarios (dB(A))
TR29	45.3	45.5	0.2
TR30	45.4	44.3	-1.1
TR31	45.7	44.7	-1.0
TR32	47.9	47.3	-0.6
TR33	49.5	48.4	-1.1
TR34	49.6	48.5	-1.1
TR35	48.4	48.3	-0.1
TR36	48.7	48.5	-0.2
TR37	46.1	46.1	0.0
TR38	49.3	49.2	-0.1

The conclusions of the assessment are still the same with noise levels within the majority of gardens below the 50dB criterion with exception of two receptors (TR01 and TR04) which represent a school and holiday caravan site respectively where the outdoor spaces are not considered to be as sensitive to changes in noise levels as residential gardens. Furthermore, it should be noted that noise levels at these two locations are sit within the recommended upper guideline value for private external amenity areas of 55dB.