

**Ambient Air and Sound Screening Assessment  
Liffey Cycle Route.**

***DRAFT***

Study Area Bounded by Brunswick Street  
and  
Ellis Quay\Arran Quay

Produced by  
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## **Air and Noise Screening Assessment for the Liffey Cycle Route.**

### ***DRAFT***

An assessment of the likely impact on ambient sound and air quality due to the implementation of what is known as “Option 7” of the Liffey Cycle route has been carried out. The assessment was carried out in a study area bounded by Brunswick Street and Ellis Quay\Arran Quay. AECOM, who have been requested by Dublin City Council to undertake strategic and local traffic modelling as part of the Liffey Cycle Route Project, provided Annual Average Daily Totals (AADT) for traffic volumes on each road link in the study area. These traffic volumes were used to calculate the projected air and sound level emissions for the following scenarios:-

Do Minimum1(DM1) - Existing infrastructure, LUAS and College Green proposals

Do Something1(DS1) - Includes DM1 as well as Liffey Cycle Proposal

Do Something2(DS2) - Includes DM1 as well as Eden Quay Bus Gate and Liffey Cycle Proposal

The Design Manual for Roads and Bridges (DMRB) Screening model (Ver1.30c) and NOx-NO<sub>2</sub> Calculator v4.1 was used to assess the likely impacts on air quality at seven of the major roads within the study area. This model has been designed to ‘screen’ the impacts on air quality. A more detailed assessment is required to be carried out should this screening show that the estimated impacts on air quality approach (within 95%) breaching any of the statutory EU limit values.

Dublin City’s ‘Noise Model’ has been used to assess the projected impacts for the DM1, DS1 and DS2 proposals. This model is used as the nationally approved method for assessing compliance with the European Environmental Noise Directive.

### **Summary**

This report sets out a summary of the results of both the Noise and Air Quality Impact Assessments. The study found, based only on the relevant traffic volumes that the impact on air quality in the study area is at worst minor. There is an improvement in ambient sound levels at the majority of residential buildings. During the day and at night more residences are predicted to fall within the daytime and night time desirable levels for the DS1 and DS2 scenarios than for DM1 scenario. However there is a slight increase in the number of residences in the undesirable night time band for the DS1 and DS2 scenarios.

## Air Quality Assessment

Impacts at seven locations within the study area were assessed. The DMBR Screening model was used with the relevant traffic volumes for the DM1, DS1 and DS2 scenarios. An emphasis has been placed on the assessment of Nitrogen Dioxide Levels and PM<sub>10</sub>/PM<sub>2.5</sub> as these are currently pollutants of concern in relation to ambient air quality in Dublin. The 'Magnitude of Change' and 'Impact of Change' categories are defined as per Appendix 10 of the 'Guidelines for the Treatment of Air Quality During the Planning and Construction of national Road Schemes' published by TII. Set out below is a summary chart of the outputs of the model:-

Nitrogen Dioxide Values

Site	Site	Option 7 DM1	DS1	Difference DS1-DM1	Magnitude of Change	Impact of Change in Concentration
1	Blackhall Place	21.9	23.62	1.72	Small	Negligible
2	North King Street	20.84	21.17	0.33	Imperceptible	Negligible
3	Georges Lane	18.14	18.82	0.68	Small	Negligible
4	Queen St	23.59	22.7	-0.89	Imperceptible	Negligible
5	Brunswick St	19.6	20.91	1.31	Small	Negligible
6	Church Street	26.55	27.3	0.75	Small	Negligible
7	Arran Quay	26.95	28.69	1.74	Small	Negligible
<i>Values in Microgrammes per cubic metre</i>						
Site	Site	Option 7 DM1	DS2	Difference DS2-DM1	Magnitude of Change	Impact of Change in Concentration
1	Blackhall Place	21.9	23.58	1.68	Small	Negligible
2	North King Street	20.84	21	0.16	Imperceptible	Negligible
3	Georges Lane	18.14	18.68	0.54	Small	Negligible
4	Queen St	23.59	22.71	-0.88	Imperceptible	Negligible
5	Brunswick St	19.6	20.72	1.12	Small	Negligible
6	Church Street	26.55	27.05	0.5	Small	Negligible
7	Arran Quay	26.95	24.62	-2.33	Imperceptible	Negligible
<i>Values in Microgrammes per cubic metre</i>						

Nitrogen Dioxide levels are only summarised here as it was found that increases in PM<sub>10</sub> values did not exceed ambient values of 18 microgram's /m<sup>3</sup> at any of the seven locations. With no increases larger than 2.3 micrograms per cubic metre and with negligible impact, predicted PM<sub>10/2.5</sub> levels are thus comfortably below the EU limit values.

As can be seen from the chart above, implementation of 'Option7' has an overall negligible impact on Nitrogen Dioxide levels at all locations except location 4 and 7, where there is a reduction in predicted levels. None of the predicted small increases approach a breach of the annual Nitrogen Dioxide mean value of 40 microgram's /m<sup>3</sup> or daily values above 50 microgram's/m<sup>3</sup>. Therefore there is no requirement to carry out a more detailed assessment. Within the context of the current air quality at these seven locations, the overall projected future impact on implementation of 'Option 7' is considered to be no greater than 'Minor'.

## Noise Assessment

Impacts on 5316 residential address points in the study area were assessed. The Noise model was used to assess the Do Minimum1 scenario against which the other two scenarios were compared. The three scenarios were tested using the relevant traffic volumes provided by AECOM. The outputs of the modelling were compared to the 'Desirable' and 'Undesirable' categories as defined in the 'Dublin Agglomeration Environmental Noise Action Plan 2013-2018'. Set out below is a summary chart of the outputs of the model:-

Noise Model Output Summary									
Values in dB(A)									
DoMin1 Residential Addresses			DoSome1 Residential Addresses			% Difference DoSome1-DoMin1			
dB(A)	Day	Night	dB(A)	Day	Night	dB(A)	Day	Night	
<45	870	1870	<45	856	1844	<45	0	0	
45-50	794	698	45-50	751	737	45-50	-1	1	
50-55	529	627	50-55	598	581	50-55	1	-1	
55-60	769	695	55-60	672	914	55-60	-2	4	
60-65	598	1406	60-65	515	928	60-65	-2	-9	
65-70	537	20	65-70	1117	312	65-70	11	5	
70-75	1219	0	70-75	807	0	70-75	-8	0	
>=75	0	0	>=75	0	0	>=75	0	0	
<50 @night Desirable;			<55 @Daytime Desirable;			>55 @night Undesirable;		>70 @ day undesirable	
DoMin1 Residential Addresses			DoSome2 Residential Addresses			% Difference DoSome2-DoMin1			
dB(A)	Day	Night	dB(A)	Day	Night	dB(A)	Day	Night	
<45	870	1870	<45	857	1859	<45	0	0	
45-50	794	698	45-50	811	769	45-50	0	1	
50-55	529	627	50-55	554	526	50-55	0	-2	
55-60	769	695	55-60	735	914	55-60	-1	4	
60-65	598	1406	60-65	437	1047	60-65	-3	-7	
65-70	537	20	65-70	1076	201	65-70	10	3	
70-75	1219	0	70-75	846	0	70-75	-7	0	
>=75	0	0	>=75	0	0	>=75	0	0	
<50 @night Desirable;			<55 @Daytime Desirable;			>55 @night Undesirable		>70 @ day undesirable	

As can be seen from the data, implementation of 'Option7' has an overall positive impact on most of the residential buildings in the study area, with a reduction of between 7-8% in the number of properties in the 70-75dB daytime sound band when the DS1 and DS2 scenarios are compared to the DM1 scenario. There are also predicted small increases in the number of residential building falling within the desirable day and night time bands for the DS1 and DS2 scenarios. However for the DS1 and DS2 scenarios there is a predicted increase of 41 residential properties in the night time undesirable category, mainly along Brunswick Street.

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