Leith Connections

Post-6-Month Data Collection – Summary Report

The City of Edinburgh Council

September 2024

Delivering a better world

Contents

1. Introduction

AECOM was commissioned by The City of Edinburgh Council (CEC) to provide consultancy support to carry out associated pre and post monitoring and evaluation tasks for the Leith Connections project.

This report presents data gathered mainly in June 2024 by AECOM, 6-months after the start of the trial Low Traffic Neighbourhood (LTN) layout introduction. Data in this report will be compared to the previously published baseline data, which was collected before the implementation of the LTN.

Results from the following post-6-month surveys are summarised and compared to the baseline surveys in this report:

- Automatic Traffic Counts (ATCs);
- Junction Turning Counts (JTCs);
- Pedestrian / Cycle Surveys;
- Acoustic Surveys;
- Air Quality; and
- Hands Up School Surveys *(data collected by City of Edinburgh Council)*

2. Automatic Traffic Counts

Automatic Traffic Counts (ATC) were undertaken at the following locations for 24 hours per day between Monday 24th June and Friday 28th June 2024:

- Site 1 – Coburg Street
- Site 2 – Sandport Place
- Site 3 – Henderson Street
- Site 4 – Water Street
- Site 5 – Queen Charlotte Street
- Site 6 – Baltic Street
- Site 7 – Elbe Street
- Site 8 – Links Place
- Site 9 – Duncan Place
- Site 10 – Wellington Place

A summary of the ATC results is given in Figure 1. Results are given for each of the 10 sites labelled 1-10. The following results are given:

- Average vehicle flow (weekday);
- Average northbound/eastbound AM peak hour flow (weekday) and the average northbound/eastbound PM peak hour flow (weekday);
- Average southbound/westbound AM peak hour flow (weekday) and the average southbound/westbound PM peak hour flow (weekday);
- Average northbound/eastbound AM peak hour speed (weekday) and the average northbound/eastbound PM peak hour speed (weekday);
- Average southbound/westbound AM peak hour speed (weekday) and the average southbound/westbound PM peak hour speed (weekday).

All flows and speeds include bicycles, except for the post-6-month period speeds, due to a significant increase in the proportion of bicycles recorded during this period.

In the baseline JTC analysis, the peak AM and PM hour periods at the 10 sites were found to be 07:45 to 08:45 (AM) and 16:00 to 17:00 (PM). For the baseline ATC analysis, the closest available time-periods were 08:00 to 09:00 (AM) and 16:00 to 17:00 (PM). For consistency, this post-6-months ATC reporting has compared against the same fixed peak periods, as the baseline ATC report (08:00 to 09:00 (AM) and 16:00 to 17:00 (PM).

Finally, an additional three sites have been recorded as part of the 6-month monitoring to understand local conditions and provide data for future 12-month monitoring. These results are contained within Tables 1-3 with the following site references:

- Site 11 - Salamander Place
- Site 12 - Fox Street
- Site 13 - Hermitage Place

(a description of an Automatic Traffic Count and methodology can be found in the Leith Connections Monitoring & Evaluation Plan)

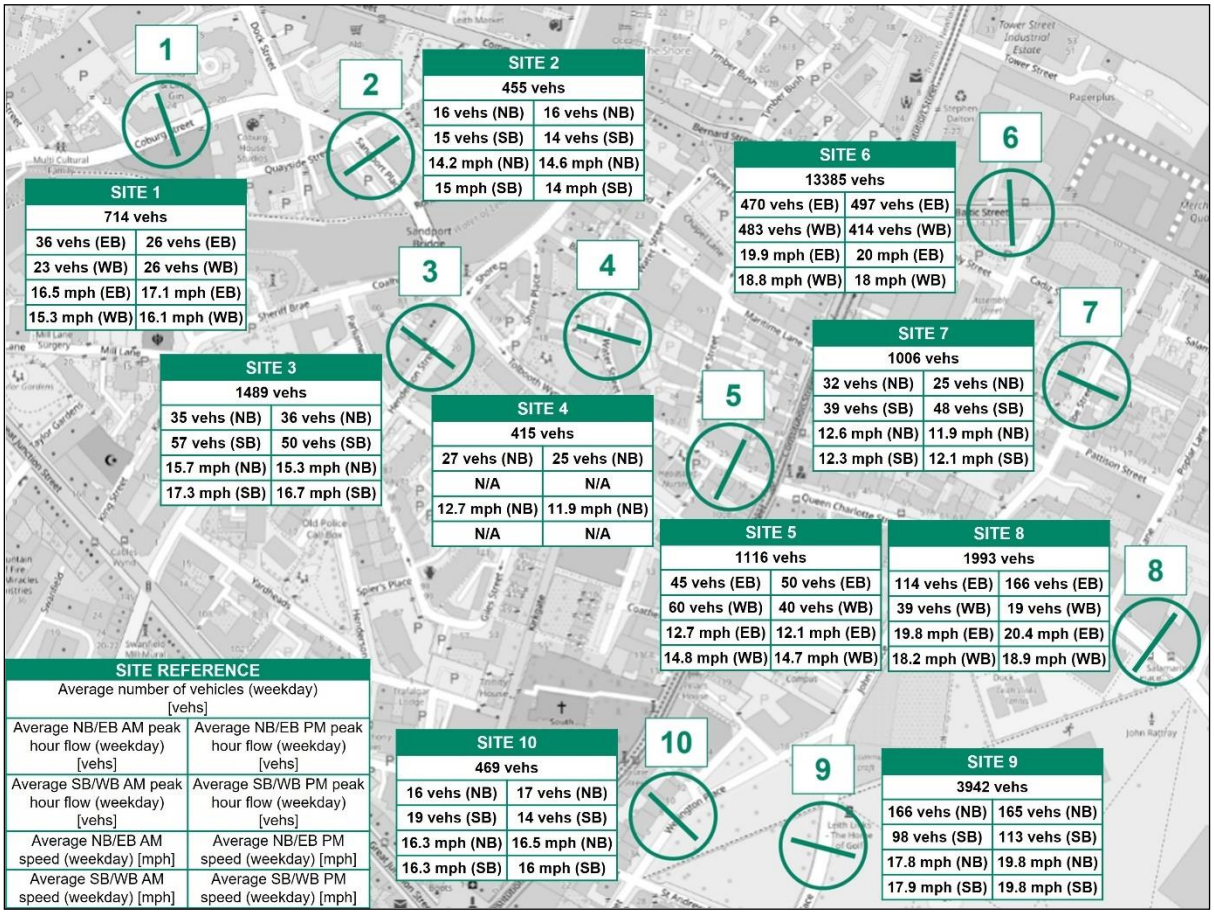


Figure 1: Summary of ATC Surveys

Table 1, Table 2, and Table 3 below compare flows and speeds for the baseline and post-6-month ATC study periods. All values are daily averages for a full 24-hour period.

Two-way results are not always the sum of both directions due to rounding. For the average flows, sites shaded in grey (11-13) only have data for the post-6-month period and are therefore excluded from the totals' comparison. Bicycles are excluded from the speed calculations for the post 6-month period due to a significant increase in the proportion of bicycles recorded during this period.

The 85th percentile speed is the speed at or below which 85% of vehicles are traveling at a particular ATC site. For example, if you were to measure the speeds of cars at a site with 100 vehicles, 85 of them would be going at or below this speed. Weekday average 85th percentile speeds have been calculated by finding the 85th percentile speed for each weekday and averaging these values.

Table 1: Full 24 Hours - Weekday Average Flows (vehs)

Site	Location	Road Type	Baseline Surveys (March '23)			6 Month Surveys (June '24)			Difference			
			NB/EB	SB/WB	Two-Way	NB/EB	SB/WB	Two-Way	NB/EB	SB/WB	Two-Way	Two-Way (%)
1	Coburg Street	New no-through road	2664	2439	5103	385	329	714	-2279	-2110	-4389	-86.0%
2	Sandport Place	New no-through road	2376	1531	3910	221	234	455	-2155	-1297	-3455	-88.4%
3	Henderson Street	New no-through road	1843	2579	4421	584	905	1489	-1259	-1674	-2932	-66.3%
4	Water Street	New no-through road	2571	3	2575	390	25	415	-2181	-	-2160	-83.9%
5	Queen Charlotte Street	LTN internal road	988	1969	2960	523	592	1116	-465	-1377	-1844	-62.3%
6	Baltic Street	Boundary road	8095	8099	16192	7035	6350	13385	-1060	-1749	-2807	-17.3%
7	Elbe Street	LTN internal road	702	885	1587	422	584	1006	-280	-301	-581	-36.6%
8	Links Place	New no-through road	2781	3020	5800	1700	293	1993	-1081	-2727	-3807	-65.6%
9	Duncan Place	LTN internal road	1952	1371	3320	2401	1541	3942	449	170	622	18.7%
10	Wellington Place	New no-through road	923	875	1800	236	233	469	-687	-642	-1331	-73.9%
11	Salamander Place	LTN internal road	-	-	-	2292	1277	3569	-	-	-	-
12	Fox Street	LTN internal road	-	-	-	118	413	531	-	-	-	-
13	Hermitage Place	Boundary road	-	-	-	4727	4471	9197	-	-	-	-
		Boundary road total			16192			13385			-2807	-17.3%
		LTN internal road total			7867			6064			-1803	-22.9%
		New no-through road total			23609			5535			-18074	-76.6%

Table 2: Full 24 Hours - Weekday Average Speeds (mph)

Site	Location	Road Type	Baseline Surveys (March '23) NB/EB	Baseline Surveys (March '23) SB/WB	6 Month Surveys (June '24) NB/EB	6 Month Surveys (June '24) SB/WB	Difference NB/EB	Difference SB/WB
1	Coburg Street	New no-through road	21.1	20.4	16.9	15.4	-4.2	-4.9
2	Sandport Place	New no-through road	20.9	20.7	13.9	14.2	-7.1	-6.6
3	Henderson Street	New no-through road	16.7	18.6	15.6	17.0	-1.1	-1.6
4	Water Street	New no-through road	14.3	-	11.9	-	-2.4	-
5	Queen Charlotte Street	LTN internal road	14.7	18.1	12.3	14.9	-2.4	-3.2
6	Baltic Street	Boundary road	19.7	22.5	21.0	19.4	1.3	-3.1
7	Elbe Street	LTN internal road	13.9	13.6	11.8	12.1	-2.1	-1.5
8	Links Place	New no-through road	16.6	16.7	20.4	19.4	3.9	2.7
9	Duncan Place	LTN internal road	20.2	20.7	20.1	19.9	-0.2	-0.8
10	Wellington Place	New no-through road	16.3	16.1	16.3	15.4	-0.1	-0.6
11	Salamander Place	LTN internal road	-	-	14.8	15.3	-	-
12	Fox Street	LTN internal road	-	-	13.4	13.4	-	-
13	Hermitage Place	Boundary road	-	-	22.5	20.7	-	-

Table 3: Full 24 Hours - Weekday Average 85th Percentile Speeds (mph)

Site	Location	Road Type	Baseline Surveys (March '23) NB/EB	Baseline Surveys (March '23) SB/WB	6 Month Surveys (June '24) NB/EB	6 Month Surveys (June '24) SB/WB	Difference NB/EB	Difference SB/WB
1	Coburg Street	New no-through road	24.7	24.4	21.6	19.9	-3.1	-4.5
2	Sandport Place	New no-through road	24.4	24.4	17.3	17.7	-7.1	-6.7
3	Henderson Street	New no-through road	20.1	22.0	19.4	20.7	-0.7	-1.3
4	Water Street	New no-through road	17.3	-	14.8	-	-2.5	-
5	Queen Charlotte Street	LTN internal road	18.3	21.6	15.5	18.9	-2.8	-2.7
6	Baltic Street	Boundary road	24.4	25.6	24.4	23.9	0.0	-1.7
7	Elbe Street	LTN internal road	17.7	17.0	14.5	15.0	-3.2	-2.0
8	Links Place	New no-through road	22.6	21.2	24.0	25.1	1.4	3.9
9	Duncan Place	LTN internal road	23.6	23.8	24.5	24.5	0.9	0.7
10	Wellington Place	New no-through road	20.6	20.4	21.1	19.9	0.5	-0.4
11	Salamander Place	LTN internal road	-	-	17.8	18.7	-	-
12	Fox Street	LTN internal road	-	-	16.5	16.2	-	-
13	Hermitage Place	Boundary road	-	-	27.2	25.5	-	-

3. Junction Turning Counts

Junction Turning Counts (JTC) were undertaken at five junctions in the morning and in the afternoon on the 26th and 27th of June 2024. The data from 27th June has been used as it represents the busier day regarding the data collected. The AM and PM peak hour flows are summarised in figures below for the following five junctions:

- Junction 1 – Ocean Drive / Commercial Street / North Junction Street / Lindsay Road
- Junction 2 – Great Junction Street / Cables Wynd / Bonnington Road
- Junction 3 – Constitution Street / Duke Street / Great Junction Street / Leith Walk
- Junction 4 – Vanburgh Place / Lochend Road / Easter Road / Duke Street
- Junction 5 – Seafield Road / Seafield Place / Salamander Street

In the baseline JTC analysis, the peak AM and PM hour periods at the 10 sites were found to be 07:45 to 08:45 (AM) and 16:00 to 17:00 (PM). For consistency, this JTC reporting will compare against the same fixed peak periods.

An overview map of the five junctions is shown in Figure 2 below.

(A description of a Junction Turn Count and methodology can be found in the Leith Connections Monitoring & Evaluation Plan).

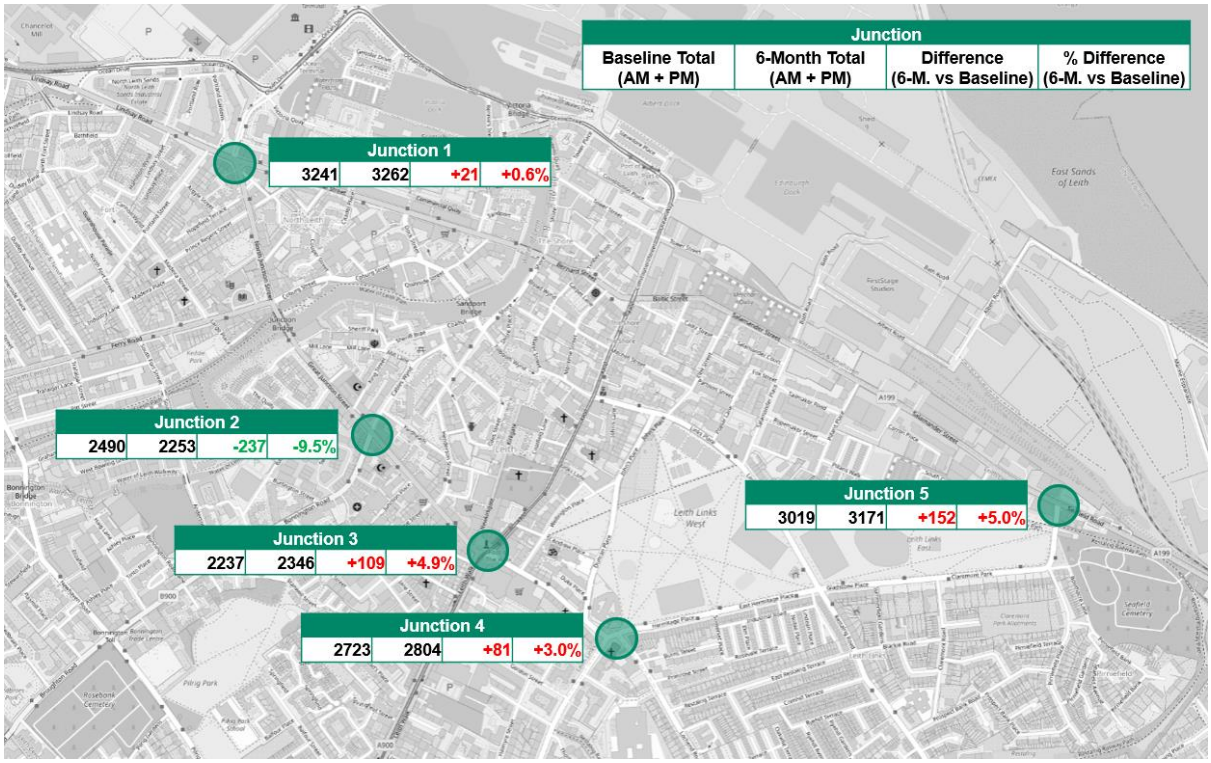


Figure 2: Peak Hour JTC vehicles (Baseline vs post-6-Month)

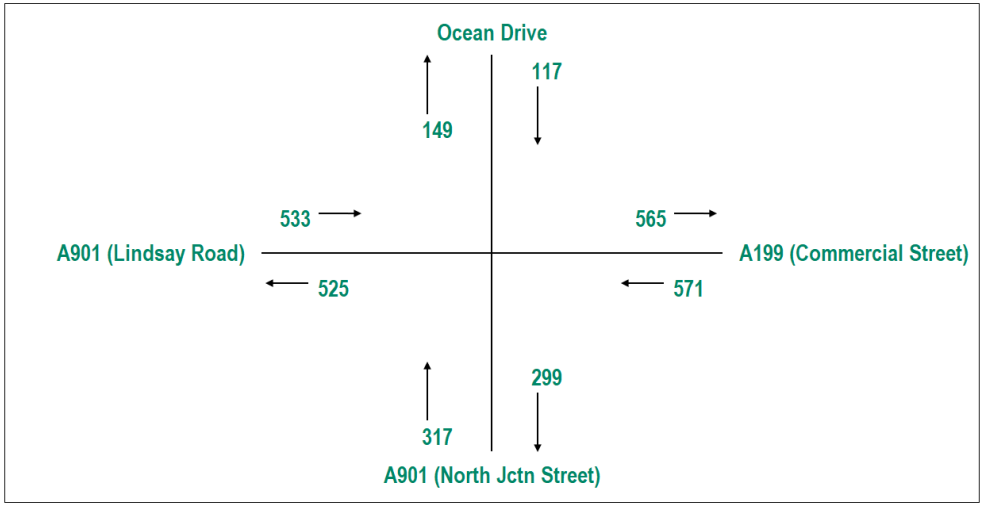


Figure 3: Junction 1 Turning Counts - AM Peak

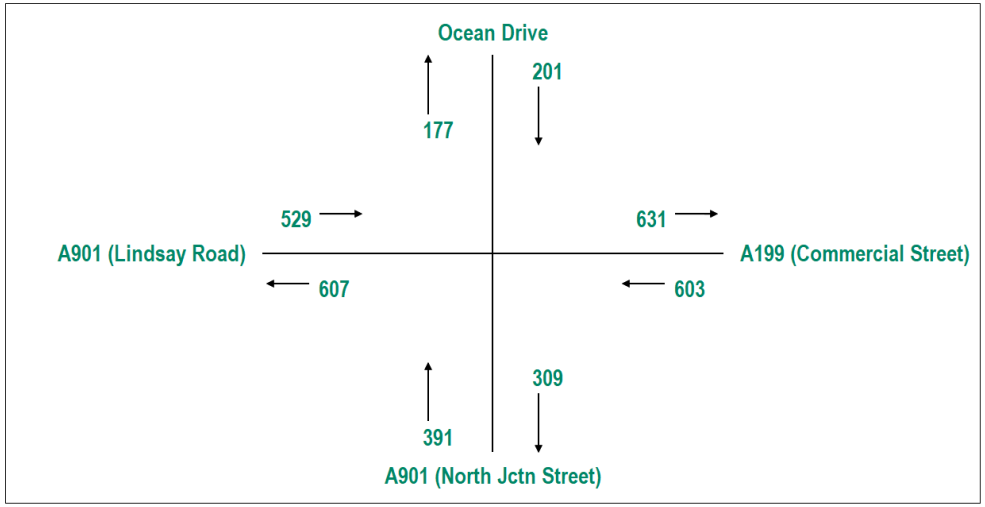


Figure 4: Junction 1 Turning Counts - PM Peak

Figure 5: Junction 2 Turning Counts - AM Peak

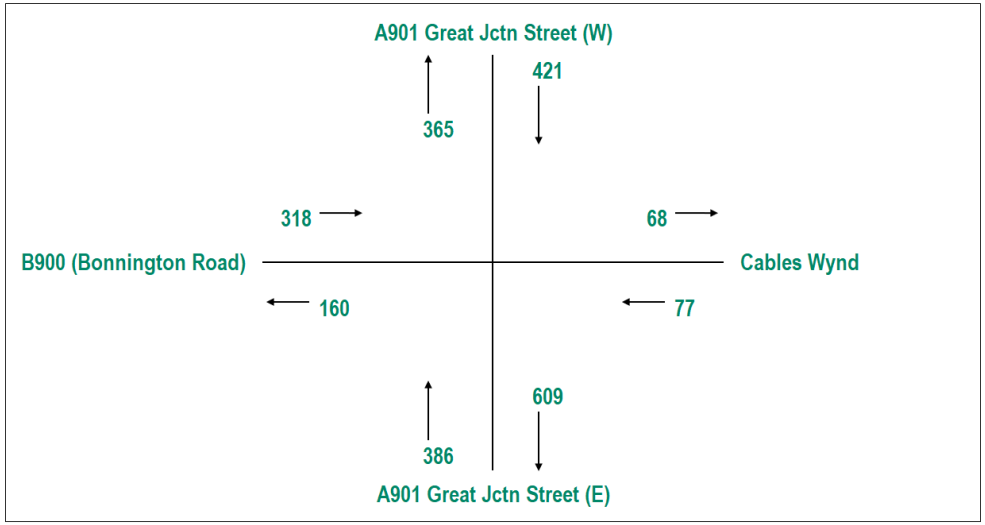


Figure 6: Junction 2 Turning Counts - PM Peak

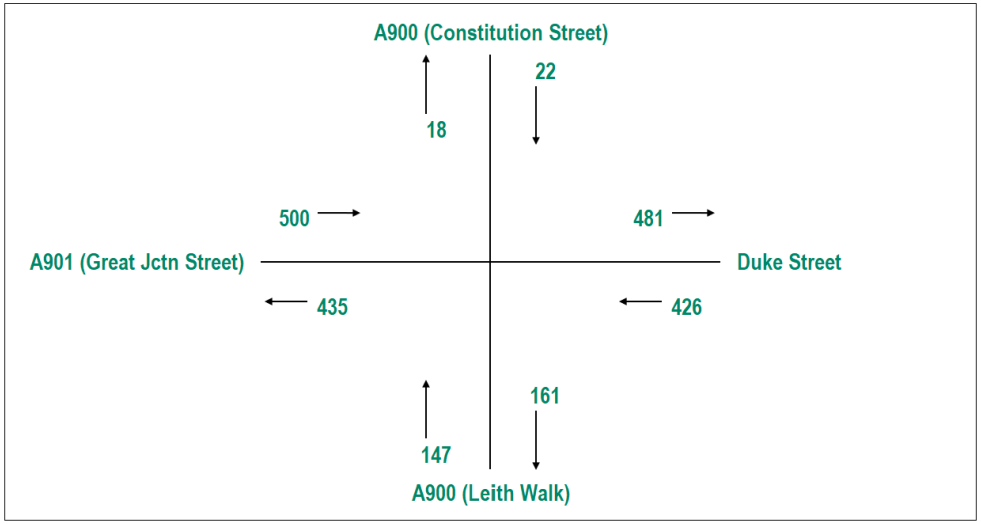


Figure 7: Junction 3 Turning Counts - AM Peak

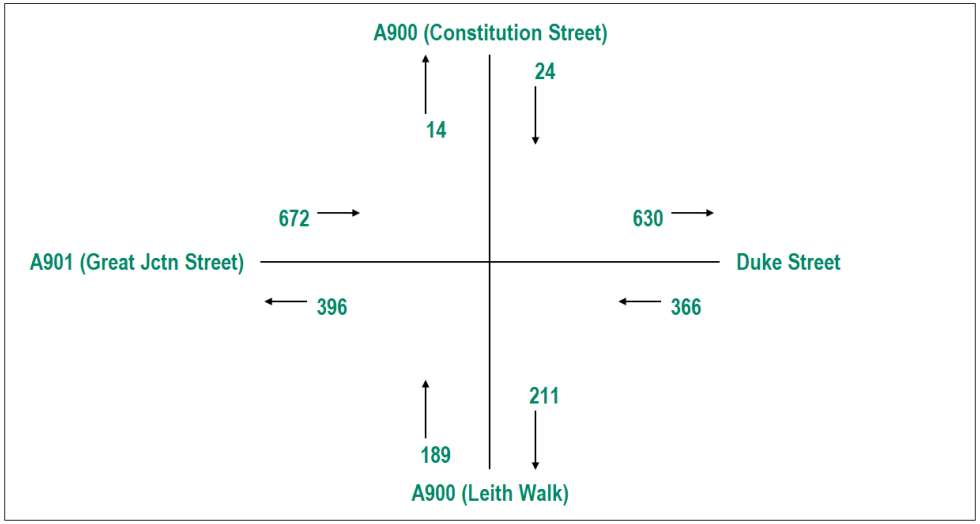


Figure 8: Junction 3 Turning Counts - PM Peak

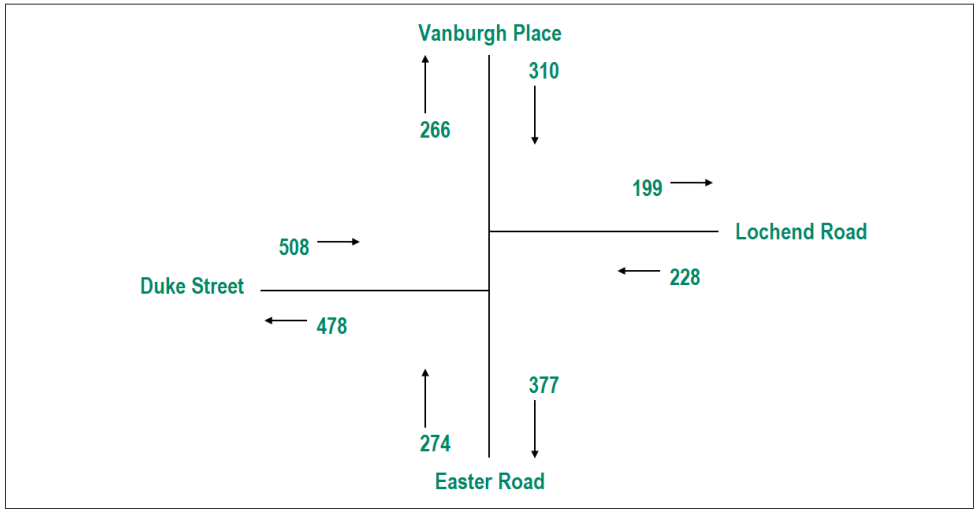


Figure 9: Junction 4 Turning Counts - AM Peak

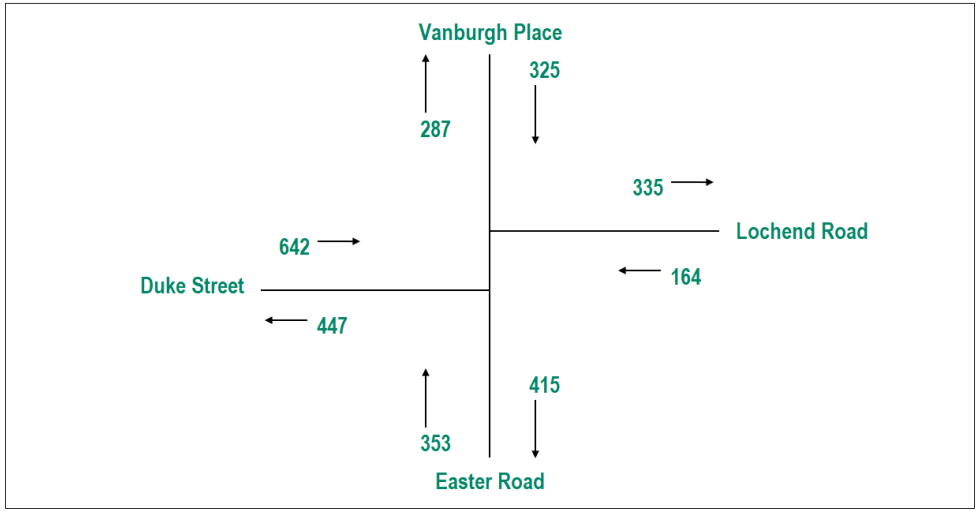


Figure 10: Junction 4 Turning Counts - PM Peak

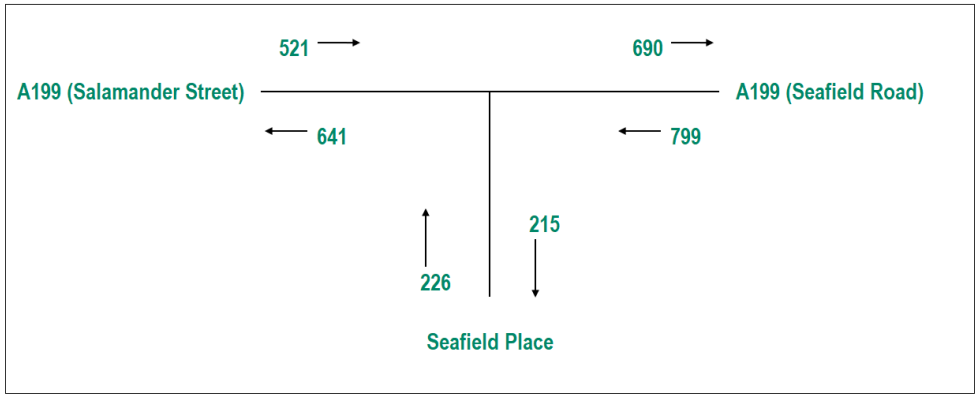


Figure 11: Junction 5 Turning Counts - AM Peak

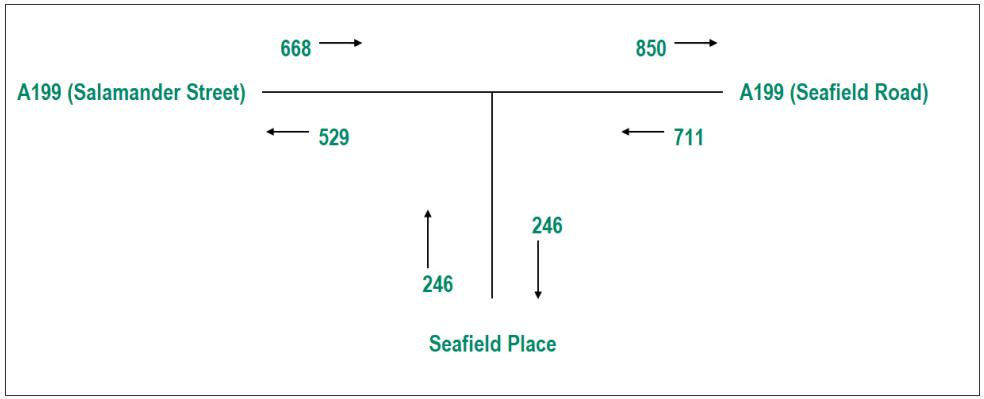


Figure 12: Junction 5 Turning Counts - PM Peak

4. Leith Links Surveys

Further to the pedestrian and cycle movement surveys summarised in Section 4, classified vehicle flow counts were undertaken at Links Gardens (location shown in Figure 13). The data was collected during 12-hour periods on 28th March 2023 (baseline), and 27th June 2024 (post 6-month).

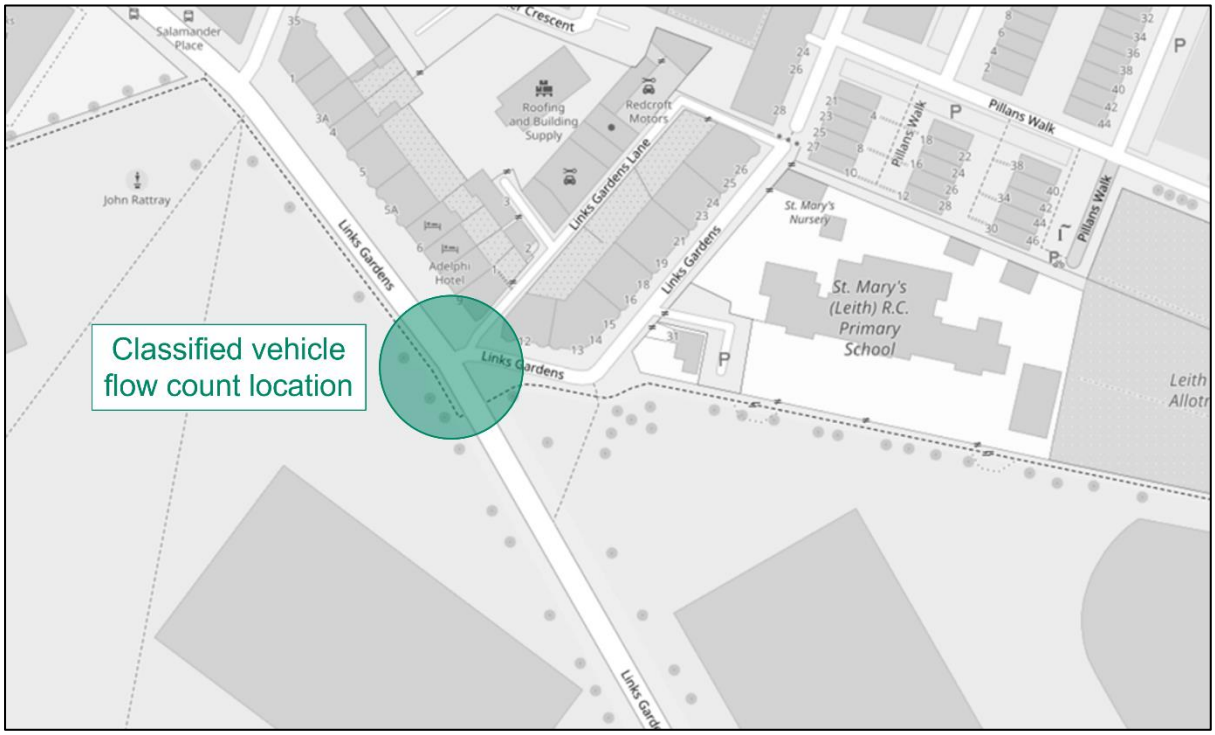


Figure 13: Leith Links Classified Vehicle Survey Location

A summary of the results is given in Table 14 below.

Table 4: Leith Links Classified Vehicle Survey Results

Survey	Direction	Peak Hour	Bicycle	Motorcycle	Cars/Taxis	LGVs	HGVs	Total Vehicles
Baseline	NB	08:15 to 09:15	10	3	331	37	6	**387**
		17:00 to 18:00	2	0	188	12	3	**205**
	SB	08:15 to 09:15	1	1	126	23	6	**156**
		16:15 to 17:15	0	0	263	45	4	**311**
Post 6-month	NB	08:15 to 09:15	10	1	138	27	5	**181**
		17:00 to 18:00	8	1	98	13	3	**123**
	SB	08:15 to 09:15	1	1	114	24	8	**148**
		16:15 to 17:15	4	2	175	30	5	**216**
Difference	NB	08:15 to 09:15	0	-2	-193	-10	-1	**-206**
		17:00 to 18:00	6	1	-90	1	0	**-82**
	SB	08:15 to 09:15	0	0	-12	1	2	**-8**
		16:15 to 17:15	4	2	-88	-15	1	**-95**

5. Pedestrian / Cycle Surveys

5.1 Pedestrian and Cycle Movements

Manual pedestrian and cycle surveys were undertaken at 11 sites in Leith, Edinburgh, during a 12-hour period on Thursday 27th June 2024. Details of the 11 sites and their corresponding result summaries (figures) are given in Table 5 below.

Table 5: Pedestrian and Cycle Movement Survey Locations and Corresponding Results

Site Reference	Site Description	Result Summary
Site A	Coburg Street / Couper Street / Water of Leith Path	Figure 13
Site B	Sandport Place / Commercial Wharf / Water of Leith Path	Figure 15
Site C	Sandport Place / Shore / Tolbooth Wynd / Henderson Street	Figure 15
Site D	Shore at Broad Wynd	Figure 14
Site E	Queen Charlotte Street at Maritime Street	Figure 13
Site F	Duncan Place	Figure 13
Site G(i)	Links Gardens (north)	Figure 16
Site G(ii)	Links Gardens (mid-north)	Figure 16
Site G(iii)	Links Gardens (mid-south)	Figure 15
Site G(iv)	Links Gardens (south)	Figure 15
Site H	Leith Links (East / South / West) / South Carron Wynd	Figure 13

As shown in the key for each Figure, the following results are provided for each location:

- Total number of northbound or eastbound pedestrians
- Total number of southbound or westbound pedestrians
- Total number of northbound or eastbound cyclists
- Total number of southbound or westbound cyclists
- Total number of pedestrians crossing the road (where applicable)
- Total number of cyclists crossing the road (where applicable)

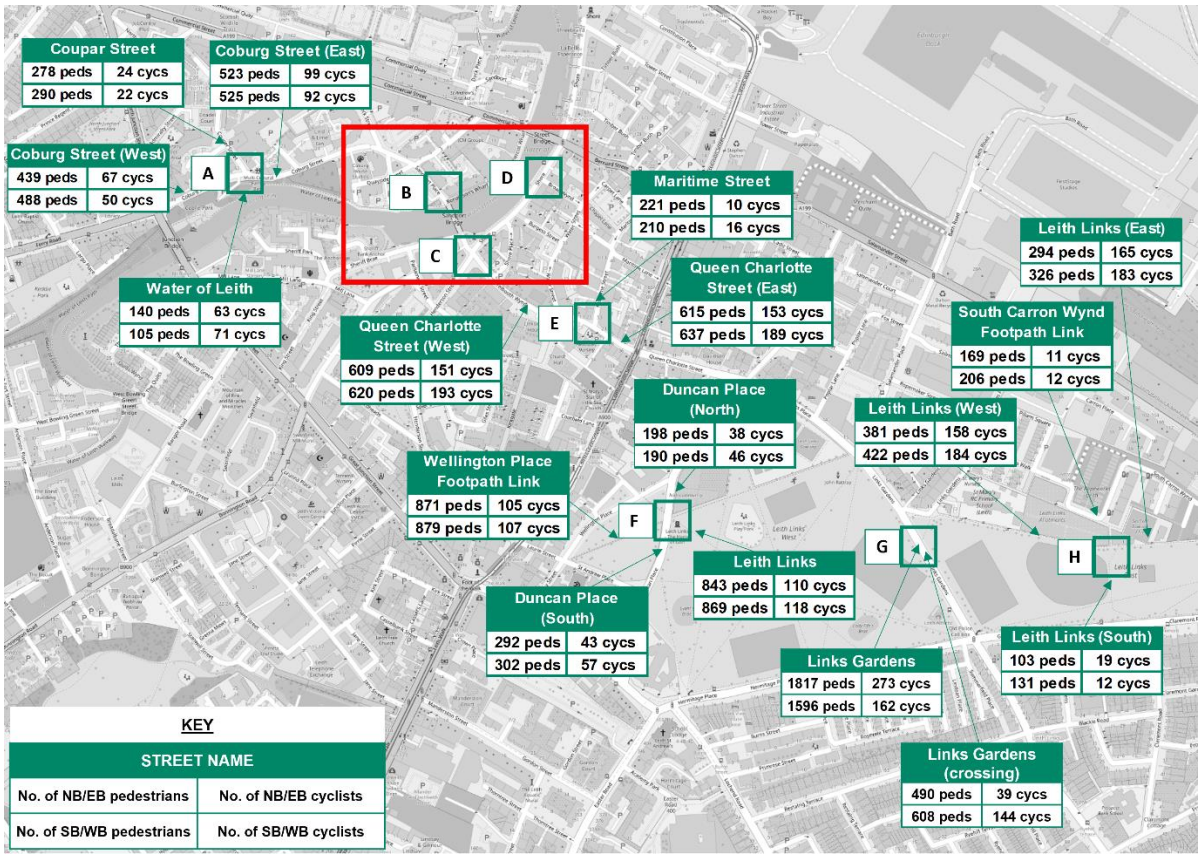


Figure 14: General Pedestrian and Cycle Movements

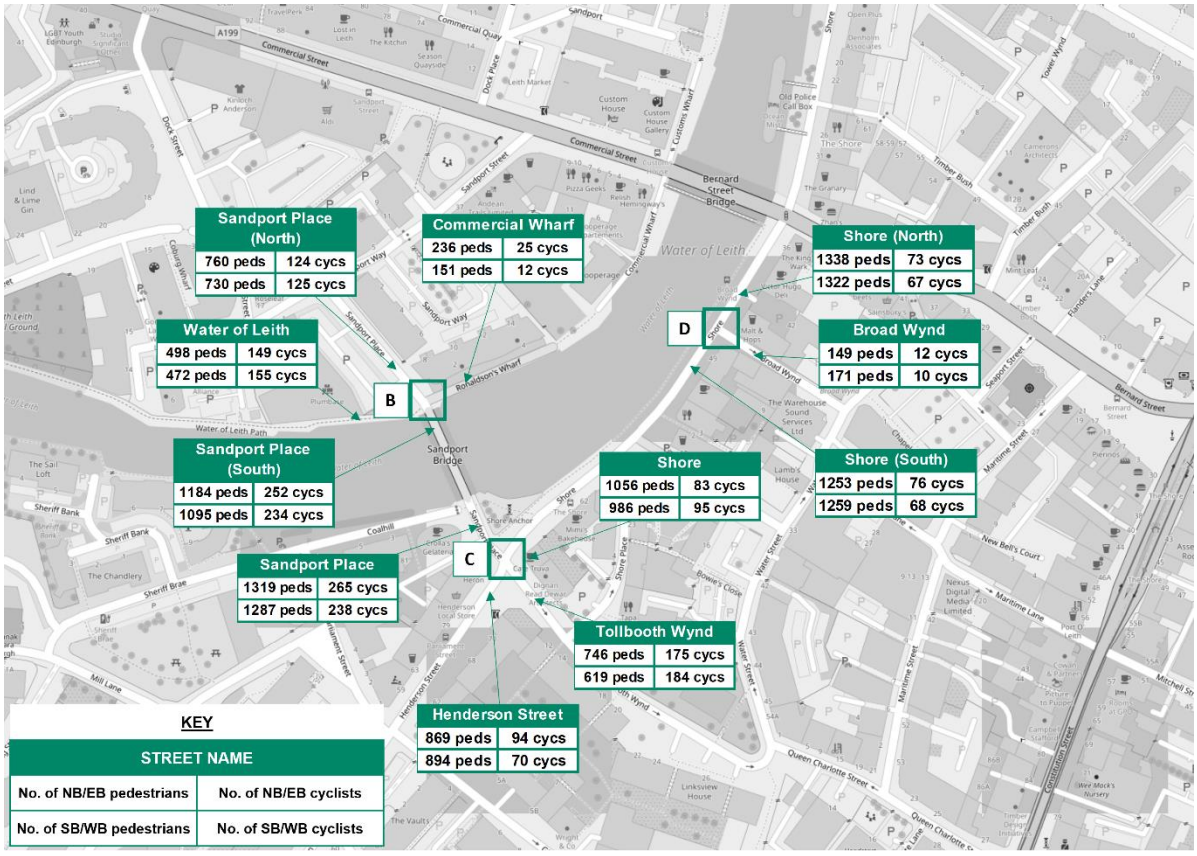


Figure 15: Shore Pedestrian and Cycle Movements

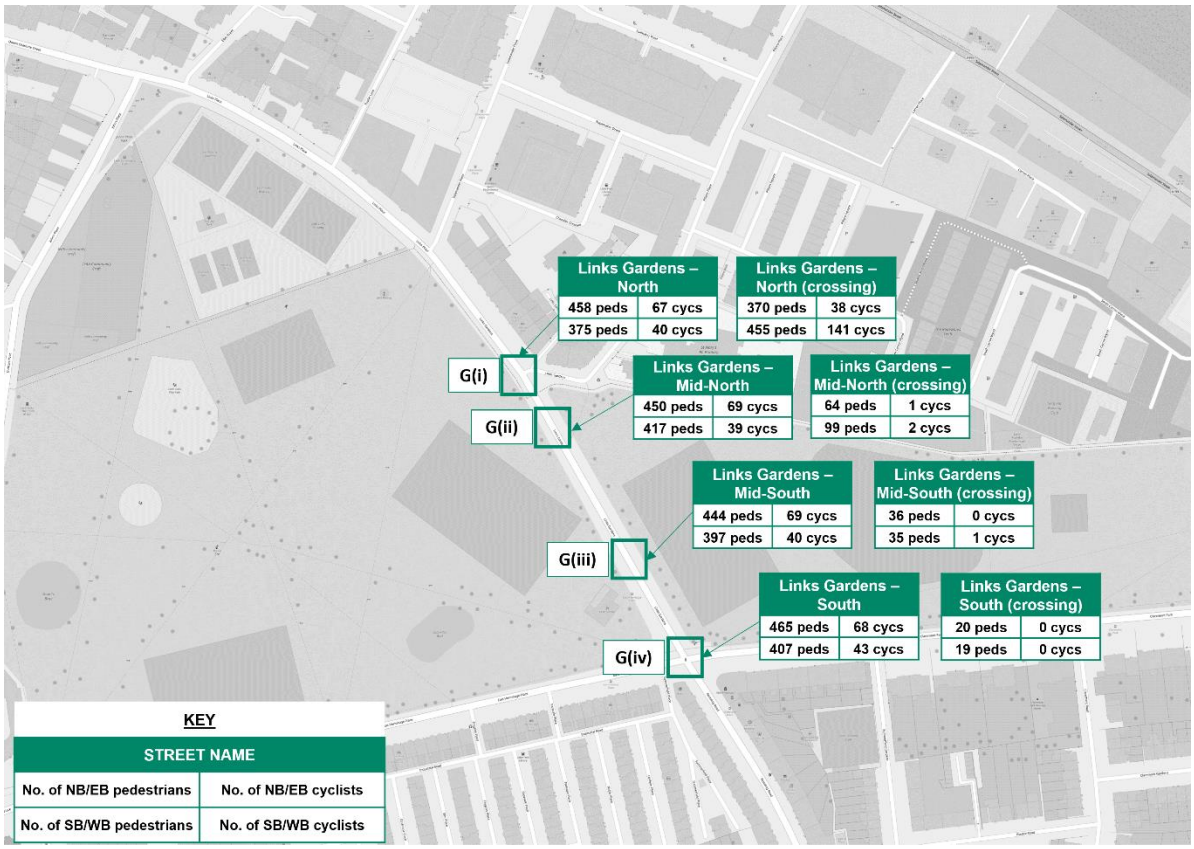


Figure 16: Links Gardens Pedestrian and Cycle Movements

A comparison between the post 6-month and baseline results is given in Table 6-Table 13 below.

When comparing the post 6-month results with the baseline results, it is important to consider the time of year each survey was conducted. While the baseline survey was carried out in early spring (March 2023) the post 6-month survey was carried out in summer when the volume of pedestrians and cyclists is likely to be higher, irrespective of any changes to the build environment or traffic volumes.

It should be noted that due to the seasonal differences between the baseline and post-6-month surveys there were varying levels of foliage at Site G(i) and Site G(iv). To ensure a clear view of the sites, this required changing the camera direction between the two survey time-periods.

Table 6: Site A Pedestrian/Cycle Movement Comparison

Arm	Baseline				6-month				Difference			
	Pedestrian		Cycle		Pedestrian		Cycle		Pedestrian		Cycle	
	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB
Coupar Street	145	165	14	16	278	290	24	22	133	125	10	6
Coburg Street (East)	433	419	52	43	523	525	99	92	90	106	47	49
Water of Leith	123	98	47	36	140	105	63	71	17	7	16	35
Coburg Street (West)	334	365	29	33	439	488	67	50	105	123	38	17

Table 7: Site B Pedestrian/Cycle Movement Comparison

Arm	Baseline				6-month				Difference			
	Pedestrian		Cycle		Pedestrian		Cycle		Pedestrian		Cycle	
	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB
Sandport Place (North)	782	656	58	62	760	730	124	125	-22	74	66	63
Commercial Wharf	223	135	15	16	236	151	25	12	13	16	10	-4
Sandport Place (South)	1113	952	162	144	1184	1095	252	234	71	143	90	90
Water of Leith	445	392	103	126	498	472	149	155	53	80	46	29

Table 8: Site C Pedestrian/Cycle Movement Comparison

Arm	Baseline				6-month				Difference			
	Pedestrian		Cycle		Pedestrian		Cycle		Pedestrian		Cycle	
	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB
Sandport Place	1123	1148	163	144	1319	1287	265	238	196	139	102	94
Shore	1123	991	54	113	1056	986	83	95	-67	-5	29	-18
Tollbooth Wynd	724	700	61	104	746	619	175	184	22	-81	114	80
Henderson Street	988	905	60	57	869	894	94	70	-119	-11	34	13

Table 9: Site D Pedestrian/Cycle Movement Comparison

Arm	Baseline				6-month				Difference			
	Pedestrian		Cycle		Pedestrian		Cycle		Pedestrian		Cycle	
	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB
Shore (North)	1321	1364	61	73	1338	1322	73	67	17	-42	12	-6
Broad Wynd	191	191	8	8	149	171	12	10	-42	-20	4	2
Shore (South)	1258	1301	63	75	1253	1259	76	68	-5	-42	13	-7

Table 10: Site E Pedestrian/Cycle Movement Comparison

Arm	Baseline				6-month				Difference			
	Pedestrian		Cycle		Pedestrian		Cycle		Pedestrian		Cycle	
	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB
Queen Charlotte Street (West)	659	745	84	101	609	620	151	193	-50	-125	67	92
Maritime Street	206	223	8	18	221	210	10	16	15	-13	2	-2
Queen Charlotte Street (East)	646	715	94	101	615	637	153	189	-31	-78	59	88

Table 11: Site F Pedestrian/Cycle Movement Comparison

Arm	Baseline				6-month				Difference			
	Pedestrian		Cycle		Pedestrian		Cycle		Pedestrian		Cycle	
	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB
Duncan Place (North)	290	255	34	25	198	190	38	46	-92	-65	4	21
Leith Links	703	748	57	71	843	869	110	118	140	121	53	47
Duncan Place (South)	355	368	39	27	292	302	43	57	-63	-66	4	30
Wellington Place Footpath Link	762	759	54	71	871	879	105	107	109	120	51	36

Table 12: Site G Pedestrian/Cycle Movement Comparison

Arm	Baseline				6-month				Difference			
	Pedestrian		Cycle		Pedestrian		Cycle		Pedestrian		Cycle	
	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB
Links Gardens – North	391	291	31	29	458	375	67	40	67	84	36	11
Links Gardens – North (crossing)	251	358	30	96	370	455	38	141	119	97	8	45
Links Gardens – Mid-North	416	351	40	35	450	417	69	39	34	66	29	4
Links Gardens – Mid-North (crossing)	81	116	2	0	64	99	1	2	-17	-17	-1	2
Links Gardens – Mid-South	395	391	34	27	444	397	69	40	49	6	35	13
Links Gardens – Mid-South (crossing)	43	37	0	0	36	35	0	1	-7	-2	0	1
Links Gardens – South	423	381	36	31	465	407	68	43	42	26	32	12
Links Gardens – South (crossing)*	312	258	12	5	-	-	-	-	-	-	-	-

** Due to the seasonal differences between the baseline and post-6-month surveys, the levels of foliage prevented video capture of pedestrians and cycles crossing at Links Gardens - South*

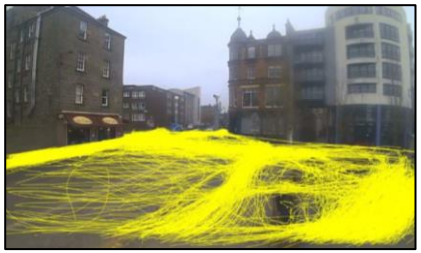
Table 13: Site H Pedestrian/Cycle Movement Comparison

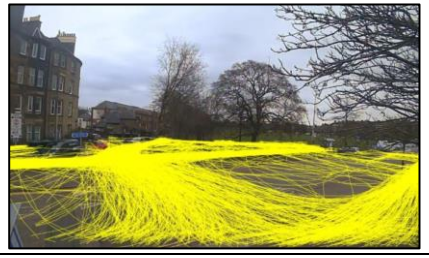
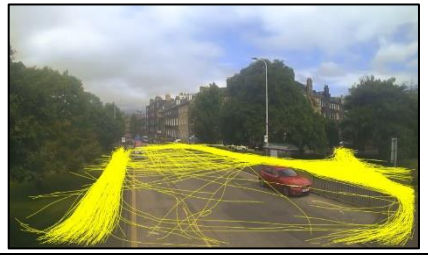
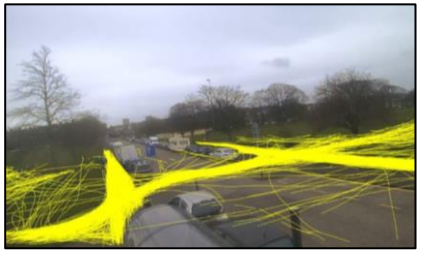
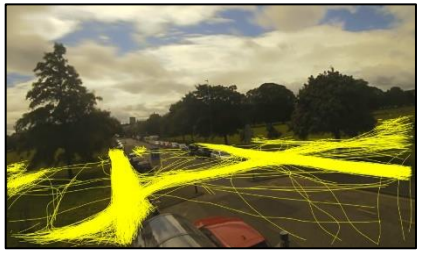
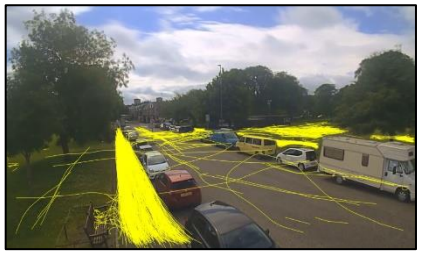
Arm	Baseline				6-month				Difference			
	Pedestrian		Cycle		Pedestrian		Cycle		Pedestrian		Cycle	
	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB	NB/EB	WB/SB
South Carron Wynd Footpath Link	133	139	7	9	169	206	11	12	36	67	4	3
Leith Links (East)	282	334	88	103	294	326	165	183	12	-8	77	80
Leith Links (South)	89	109	12	9	103	131	19	12	14	22	7	3
Leith Links (West)	347	385	87	107	381	422	158	184	34	37	71	77

5.2 Pedestrian and Cycle Tracing

Pedestrian and cycle tracing surveys were undertaken alongside the movement surveys on Thursday 27th June 2024. Movement tracing maps are shown in Table 14 below

Table 14: Pedestrian/Cycle Movement Tracing (all sites)

Site Reference	Baseline Pedestrian Tracing	Baseline Cyclist Tracing	6-Month Pedestrian Tracing	6-Month Cyclist Tracing
Site C – Sandport Place / Shore / Tolbooth Wynd (View A)				
Site C – Sandport Place / Shore / Tolbooth Wynd (View B)				
Site D – Shore at Broad Wynd				

Site Reference	Baseline Pedestrian Tracing	Baseline Cyclist Tracing	6-Month Pedestrian Tracing	6-Month Cyclist Tracing
Site G(i) – Links Gardens (north)				
Site G(ii) – Links Gardens (mid-north)				
Site G(iii) – Links Gardens (mid-south)				
Site G(iv) – Links Gardens (south)				

6. Acoustic Surveys

Noise monitoring was undertaken in June 2024 to coincide with selected automatic traffic counts (ATCs). Measurements were conducted using the shortened Calculation of Road Traffic Noise (CRTN[1]) 3-hour shortened measurement procedure. Monitoring was conducted across two days to cover typical day-to-day variations in road traffic noise.

A total of six locations were monitored simultaneously with the ATCs; A, B, C, D, E, and F. These are the same sites that were used to carry out the baseline noise survey. As before, sites A, B, C, D, and E were collated with ATC sites 1, 3, 4, 6 and 8, respectively. Figure 17 below shows the noise survey locations.

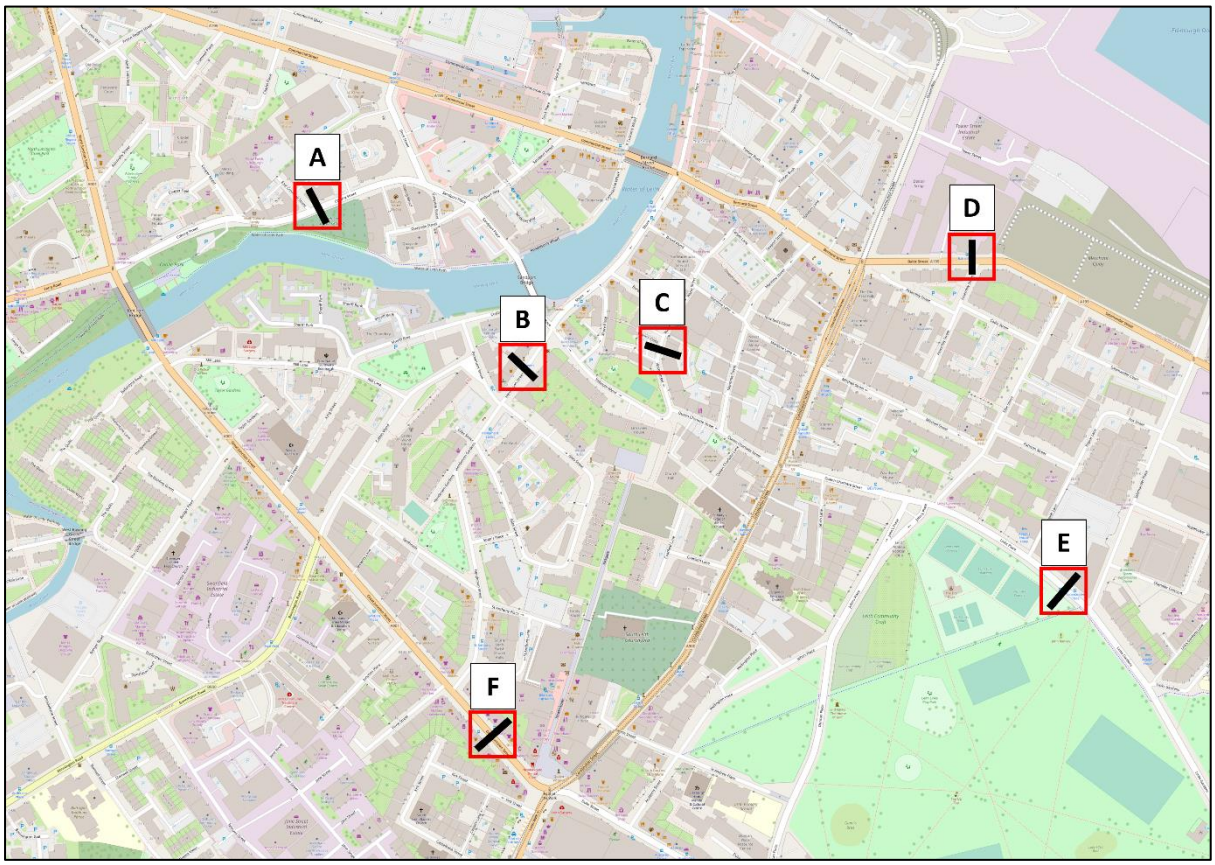


Figure 17: Noise Survey Locations

The results of the noise monitoring are given Table 3. Due to an equipment error on 26th June no measurements were recorded in the site B AM period and the site D PM period. However, observations at both sites demonstrated that conditions were comparable during the AM and PM periods and the recorded 3-hour periods were representative.

As in the baseline surveys, the dominant sound source at all locations was road traffic, although several other extraneous sources also contributed to the sound levels at all locations. These mainly included sounds from pedestrians passing-by, bird calls, and other vehicle sounds such as engines idling.

The results show a range of L_{Aeq} values between 56 dB and 72 dB. L_{A10} values ranged from 56 dB to 74 dB, L_{A90} values ranged between 43 dB and 62 dB, and L_{AFmax} values ranged from 81 dB to 105 dB.

[1] Department of Transport, Welsh Office (1988) Calculation of Road Traffic Noise (CRTN)

Table 15: 6-month post completion survey sound levels

Measurement Location	Free-field/ Façade	Measurement Period	$L_{Aeq, 3hr}$ (dB)	$L_{A10, T}$ (dB)	$L_{A90, T}$ (dB)	L_{AFmax} (dB)
A – Coburg Street	Free-field	26/06/24 10:00 - 13:00	60	63	45	87
		27/06/24 14:01 - 17:01	61	64	50	83
B – Henderson Street	Façade	26/06/24 10:00 - 13:00*	-	-	-	-
		27/06/24 14:00 - 17:00	61	65	46	82
C – Water Street	Free-field	26/06/24 10:00 - 13:00	56	56	43	81
		27/06/24 13:59 - 16:59	58	57	45	85
D – Baltic Street	Façade	26/06/24 14:00 - 17:00*	-	-	-	-
		27/06/24 10:26 - 13:26	69	72	58	99
E – Leith Links	Free-field	26/06/24 13:55 - 16:55	63	63	50	105
		27/06/24 10:26 - 13:26	65	64	54	103
F – Great Junction Street	Free-field	26/06/24 14:01 - 17:01	72	74	62	101
		27/06/24 10:09 - 13:09	70	73	62	92

Table 16 shows the difference in $L_{A10,T}$ levels (which is used by CRTN to quantify road traffic noise) between the 2024 post-6-month and 2023 baseline surveys. Negative values show a reduction in sound levels measured during the post-6-month completion survey when compared to the baseline survey.

During the 2024 survey, at location F, Great Junction Street, surveyors observed temporary traffic lights on Henderson Street between the bus stop and the A901 junction which caused some disruption and build-up of traffic. These temporary traffic lights were not in place during the 2023 survey.

Table 16: Difference between 6-month post completion and baseline sound levels

Measurement Location	Free/field/ Façade	Measurement Period	Difference in $L_{A10, T}$ (dB)
A	Free-field	AM	-9
		PM	-10
B	Façade	AM	-2*
		PM	-3
C	Free-field	AM	-13
		PM	-13
D	Façade	AM	-1
		PM	-2*
E	Free-field	AM	-2
		PM	-3
F	Free-field	AM	0
		PM	-1

* Location B (AM) in 2024 uses the 3-hour PM recorded period, while Location D (PM) in 2024 uses the 3-hour AM recorded period, due to an equipment error. These periods are then compared to their corresponding periods in 2023.

The results show that:

- At locations B, D, E and F 2024 road traffic noise $L_{A10,T}$ levels are similar to, though generally slightly lower, than those measured during the 2023 baseline survey, within 0 to 3 dB. The slightly lower measured levels in 2024 may be due in part to the wet/damp weather conditions and road surfaces during the 2023 baseline surveys, compared to the dry conditions in 2024. Wet road surfaces generally result in slightly higher traffic noise levels.

- At locations A & C 2024 road traffic $L_{A10,T}$ levels are noticeably lower than those measured during the baseline survey. Such a large reduction in measured levels would suggest a change in the dominant noise source i.e. road traffic. This result is supported by the ATCs, where sites 1 & 4 see the largest two-way flow reductions (86.0% and 83.9%, respectively) of all ATC sites that are collocated with a noise survey site.
- At all locations there were no recorded increases in $L_{A10,T}$ level.

7. Air Quality Monitoring

7.1 Introduction & Methodology

Diffusion tube surveys were undertaken at 27 locations for a six-month period between August 2022 and January 2023 to establish baseline nitrogen dioxide (NO_2) concentrations (µg/m^3) around Leith, ahead of implementation of the LTN. Post-monitoring surveys were then conducted after the LTN implementation, between November 2023 and May 2024. This section summarises the post-monitoring survey results and compares them to the baseline results. In turn, these changes are compared to differences in 24-hour weekday traffic flows using data taken from nearby ATC survey sites, to assess whether a relationship between changes in annual mean NO_2 concentrations and traffic can be identified.

Site Lei_22 was co-located with the City of Edinburgh Council (CoEC) continuous monitoring station 'Salamander Street' and five other sites (Lei_20–Lei_24) were planned to be collocated with CoEC diffusion tubes. It was attempted to co-locate Lei_20 and Lei_24 with CoEC's monitors 'Lindsay Road 198-199' and 'Restalrig Road 1 nr junction', respectively, however, the CoEC sites were not found.

The remaining diffusion tubes were placed in roadside locations around Leith. Diffusion tubes were attached to existing street furniture at a height of 1.9–3.0 m (representing ground floor exposure).

The results have undergone a process of projection, annualisation and bias adjustment in line with appropriate Defra TG.22[2] guidance and using CoEC continuous monitoring data to create a robust set of results, considered representative of the Leith area.

7.2 Results

Results for both the baseline and post-6-month surveys are presented in Table 17. Of the results, there are no diffusion tube locations where the adjusted annual mean NO_2 concentration was greater than the Air Quality Strategy Objective (AQO) of 40 µg/m^3, in either survey period. The highest pre-LTN concentration recorded was 25.8 µg/m^3 (Lei_27, Easter Road) and the highest post-LTN concentration was 23.1 µg/m^3 (Lei_26, Great Junction Street). The hourly mean air quality standard for NO_2 (200 µg/m^3) is typically considered at risk of an exceedance when the annual mean concentration exceeds 60 µg/m^3, therefore the 1-hour mean NO_2 AQO is anticipated to have been achieved at all sites in both survey periods.

Monitoring locations Lei_7 and Lei_24 could not be used for the pre- and post-LTN NO_2 concentration comparison due to their locations having changed between the two survey periods, which influences the NO_2 concentrations measured so that they are no longer directly comparable.

Monitoring using diffusion tubes is considered an "indicative" monitoring technique. This is because they have a relatively high level of uncertainty, cited in guidance as ± 25% [3]. Therefore, when comparing sets of diffusion tube results, small changes in NO_2 concentrations should be interpreted with caution.

[2] Defra (2022) Local Air Quality Management, Technical Guidance (TG22). Available at: https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf . Accessed 10/07/2024.
[3] AEA Energy and Environment (2008), Diffusion Tubes for Ambient NO_2 Monitoring: Practical Guidance. (1a), 53.

Table 17: Annualised and bias adjusted NO_2 monitoring results of the pre-LTN and 6-months of the post-LTN surveys and change in traffic (24 hr weekday traffic flows in both directions)

Tube	Site Name	Pre-LTN (µg/m^3)	Post-LTN (µg/m^3)	Change in NO_2 concentrations (µg/m^3)	Change in traffic (%)
Lei_1	Ferry Road	23.1	20.0	-3.1	-
Lei_2	A901 North Junction Street	22.1	16.2	-5.9	-
Lei_3	Coburg Street	15.4	10.8	-4.6	-86.0
Lei_4	Dock St	17.9	13.7	-4.3	-
Lei_5	Henderson St	18.0	12.1	-5.9	-66.3
Lei_6	Shore	19.0	12.2	-6.8	-
Lei_7	Queen Charlotte Street	16.1	10.4	n/a	-62.3
Lei_8	Elbe Street	15.4	11.4	-4.1	-36.5
Lei_9	Poplar Lane	12.9	11.4	-1.5	-
Lei_10	Salamander Place	17.1	12.1	-5.0	-
Lei_11	Chandler Crescent	13.6	10.3	-3.3	-
Lei_12	Links Gardens	15.5	12.5	-3.0	-
Lei_13	Seafield Place	16.3	12.4	-3.9	-
Lei_14	B900 Bonnington Road	16.8	13.4	-3.4	-
Lei_15	A910 Great Junction Street	19.8	16.3	-3.5	-
Lei_16	Wellington Place	15.1	10.9	-4.2	-74.0
Lei_17	Duke Street	24.8	21.0	-3.8	-
Lei_18	East Hermitage Place	18.2	15.3	-3.0	-
Lei_19	Lochend Road	15.1	12.8	-2.4	-
Lei_20	A901 Lindsay Road	18.2	15.3	-2.9	-
Lei_21	Commercial St	21.1	16.2	-4.9	-
Lei_22	A199 Salamander Street	22.2	15.5	-6.7	-
Lei_23	A199 Salamander Street	24.6	20.3	-4.3	-
Lei_24	Restalrig Road	17.7	13.9	n/a	-
Lei_25	Duncan Place	15.3	11.9	-3.4	18.6
Lei_26	Great Junction Street	20.7	23.1	+2.4	-
Lei_27	Easter Road	25.8	15.8	-10.0	-

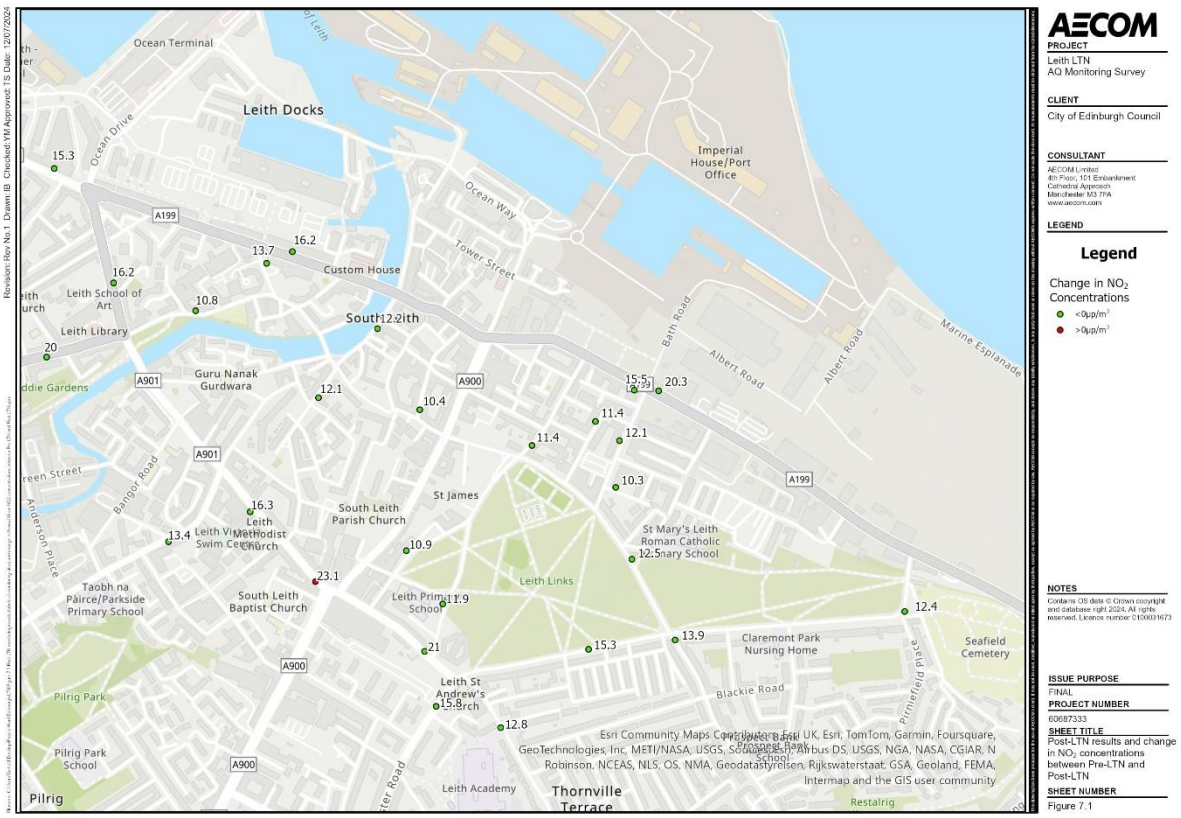


Figure 18: Post-LTN monitoring results (labels of monitoring sites) and change in Annual Mean NO_2 concentrations between Pre-LTN and Post-LTN

The largest reduction in NO_2 concentration (-10.0 µg/m^3) was found at Lei_27, located on Easter Road just outside the LTN. 7.6. The only site that had an increase in NO2 concentrations was Lei_26 with a rise of 2.4 µg/m3. Lei_26 is located on Great Junction Street.

The largest reduction in traffic of -86.0% was found on Coburg Street, NO_2 concentrations decreased by 4.6 µg/m^3 at nearby monitoring location Lei_3. There was an 18.6% increase in traffic at Duncan Place, however, NO_2 concentration continued to decrease by 3.4 µg/m^3 at monitoring location Cor_25.

At most monitoring sites, a decrease in NO_2 concentration could be determined when comparing post-LTN concentration with pre-LTN concentration. This is despite the increase between the pre-LTN and post-LTN annual mean NO_2 concentrations shown in the review of the urban background continuous monitors closest to the Study Area in Table 18. For reference, Edinburgh St Leonards and Edinburgh Currie are located 3.4km and 12.3km away, respectively. This data suggests that the improvement in NO_2 concentration is driven by factors other than changes to region background concentrations – the operation of the LTN could be one of these factors.

Table 18: Annual mean NO2 concentrations (µg/m3) at Edinburgh St Leonards and Edinburgh Currie Pre LTN (03/08/2022 - 31/01/2023) and Post LTN (02/11/2023 - 02/05/2024)

Monitor	Pre LTN	Post LTN	Difference
Edinburgh St Leonards	12.6	14.3	+1.6
Edinburgh Currie	5.5	6.2	+0.7

Note 1: 2019 - 2024 NO_2 concentrations downloaded from https://uk-air.defra.gov.uk/data/data_selector[5].
Note 2: Some of the data downloaded is provisional and potentially subject to minor change.

However, the decrease in NO_2 concentrations is consistent with the Edinburgh-wide air quality monitoring trends over the last 7 years[6] (Figure 19, Figure 20). Therefore, these decreases in NO_2 concentrations cannot be directly linked to the implementation of the LTN alone, as other factors will have contributed to the improvements, such as changing emissions in the local vehicle fleet, for example.

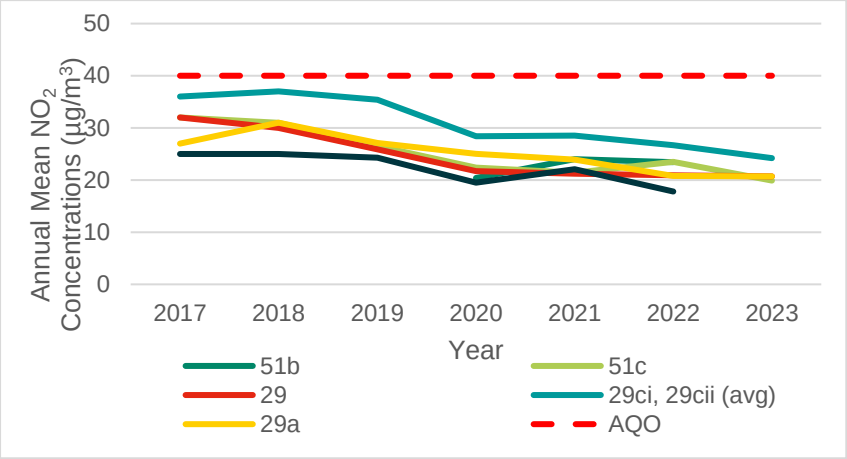


Figure 19: Seven-year trend in Annual Mean NO_2 Concentrations at non-automatic monitors located in the Salamander Street AQMA

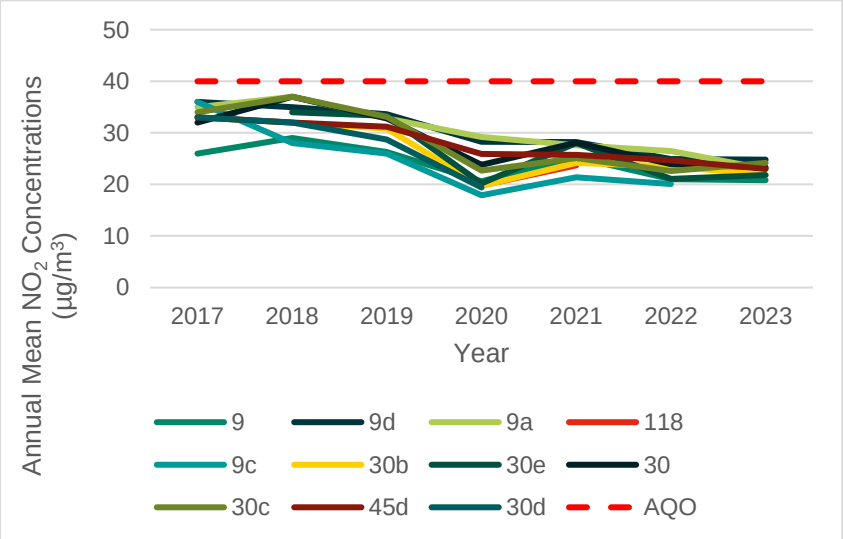


Figure 20: Seven-year trend in Annual Mean NO_2 Concentrations at non-automatic monitors located in the Great Junction AQMA

[4] DEFRA UK Air Information Resource Available at: https://uk-air.defra.gov.uk/data/data_selector.
[5] DEFRA UK Air Information Resource Available at: https://uk-air.defra.gov.uk/data/data_selector.
[6] Edinburgh City Council (2023) 2023 Air Quality Annual Progress Report (APR) for The City of Edinburgh Council. Available at: laqm-annual-progress-report-2023 (edinburgh.gov.uk) Accessed 10/07/2024

8. Hands-up School Surveys

Annual surveys have been conducted at five schools and nurseries within the project area to determine how the pupils travel to school. The following tables compare the results from surveys carried out in September 2022 and September 2023. While 2022 data for Lorne Primary School Nursery and Leith Academy Community Nursery was included in the baseline report, no data was collected for 2023 and these schools have been omitted from this section.

Table 19 and Table 20 give a summary of the totals for each of the specified modes of transport for Leith Primary School. The results are illustrated in Figure 21 and show that walking is the dominant mode of transport. Travel by public transport is low and has similar mode share as cycle, driven, park & stride, and scooter/skate.

Table 19: Leith Primary School Survey Summary (2022)

	Walk	Cycle	Scooter/Skate	Park and Stride	Driven	Bus	Taxi	Other
Total	183	9	18	21	19	12	0	1
Percentage of total	69.6%	3.4%	6.8%	8.0%	7.2%	4.6%	0.0%	0.4%

Table 20: Leith Primary School Survey Summary (2023)

	Walk	Cycle	Scooter/Skate	Park and Stride	Driven	Bus	Taxi	Other
Total	185	19	13	26	21	15	0	3
Percentage of total	65.6%	6.7%	4.6%	9.2%	7.4%	5.3%	0.0%	1.1%

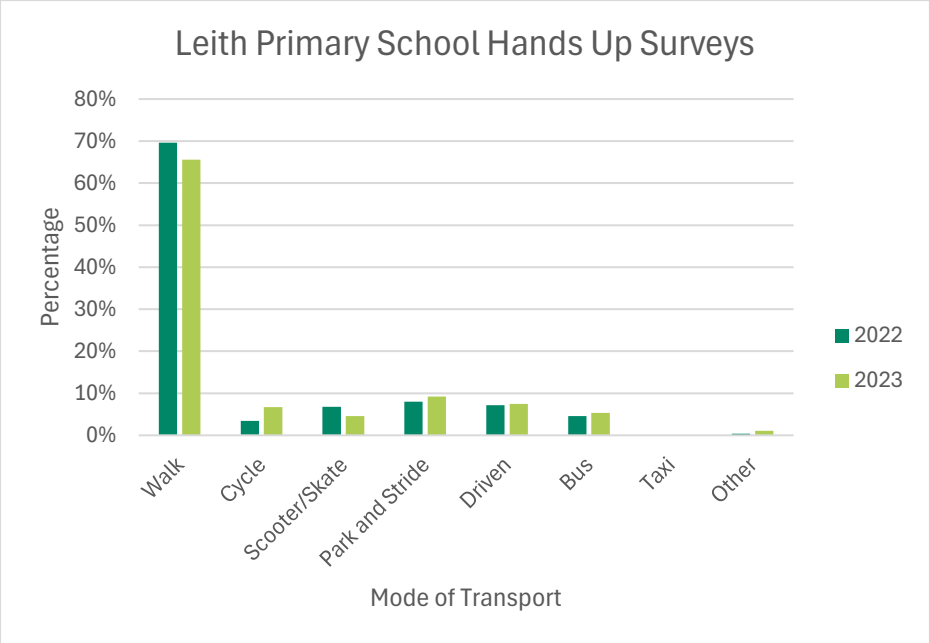


Figure 21: Leith Primary School Survey Comparison

Table 21 and Table 22 give a summary of the totals for each of the specified modes of transport for St Mary's RC (Leith) Primary School. The results are illustrated in Figure 22 and like Leith Primary, walking is the dominant mode for travelling to school. The second highest mode percentage represents pupils being driven to school. Cycling and public transport are low – both are below 5% mode share in both surveys.

Table 21: St Mary's RC (Leith) Primary School Survey Summary (2022)

	Walk	Cycle	Scooter/Skate	Park and Stride	Driven	Bus	Taxi	Other
Total	181	13	21	14	42	8	3	0
Percentage of total	64.2%	4.6%	7.4%	5.0%	14.9%	2.8%	1.1%	0.0%

Table 22: St Mary's RC (Leith) Primary School Survey Summary (2023)

	Walk	Cycle	Scooter/Skate	Park and Stride	Driven	Bus	Taxi	Other
Total	140	13	36	12	45	13	3	1
Percentage of total	53.2%	4.9%	13.7%	4.6%	17.1%	4.9%	1.1%	0.4%

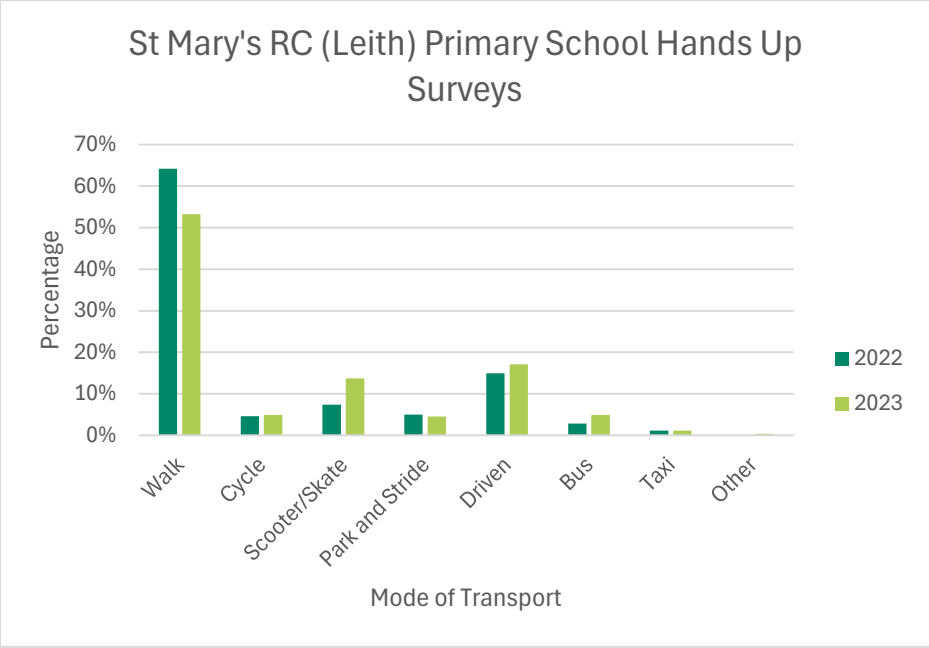


Figure 22: St Mary's RC (Leith) Primary School Survey Comparison

Table 23 and Table 24 summarise the modes of transport used by pupils for Leith Academy. The results are illustrated in Figure 23 and show walking is the main mode of travel to school. Bus is the second highest mode of transport at least 20% mode share in both surveys – less than 1% of pupils travel by taxi, scooter/skate or park and stride.

Table 23: Leith Academy School Survey Summary (2022)

	Walk	Cycle	Scooter/Skate	Park and Stride	Driven	Bus	Taxi	Other
Total	564	24	0	2	49	161	0	3
Percentage of total	70.2%	3.0%	0.0%	0.2%	6.1%	20.0%	0.0%	0.4%

Table 24: Leith Academy School Survey Summary (2023)

	Walk	Cycle	Scooter/Skate	Park and Stride	Driven	Bus	Taxi	Other
Total	187	4	6	0	35	82	0	0
Percentage of total	59.6%	1.3%	1.9%	0.0%	11.1%	26.1%	0.0%	0.0%

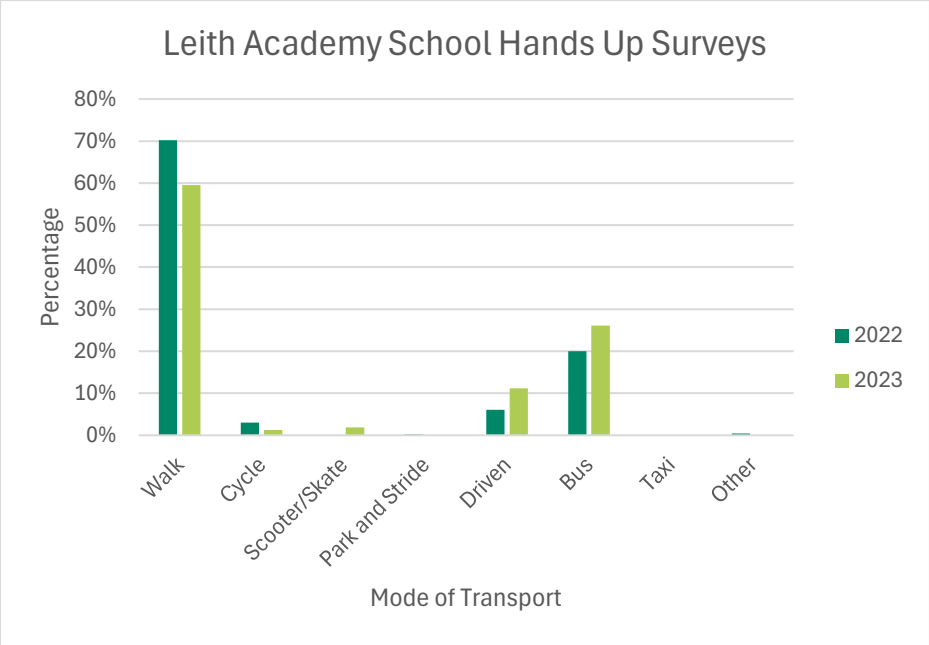


Figure 23: Leith Academy Survey Comparison

Table 25 and Table 26 summarise the modes of transport for Leith Primary School Nursery. The results are illustrated in Figure 24 and show walking is the dominant mode of travel. Like the other schools, walking is the main mode of travel used by pupils of Leith Primary School Nursery. In both surveys, pupils being driven to school represents the second highest mode share. Travel by public transport and cycling is low.

Table 25: Leith Primary School Nursery Survey Summary (2022)

	Walk	Cycle	Scooter/Skate	Park and Stride	Driven	Bus	Taxi	Other
Total	27	1	4	0	9	2	0	0
Percentage of total	62.8%	2.3%	9.3%	0.0%	20.9%	4.7%	0.0%	0.0%

Table 26: Leith Primary School Nursery Survey Summary (2023)

	Walk	Cycle	Scooter/Skate	Park and Stride	Driven	Bus	Taxi	Other
Total	22	0	2	0	6	2	0	1
Percentage of total	66.7%	0.0%	6.1%	0.0%	18.2%	6.1%	0.0%	3.0%

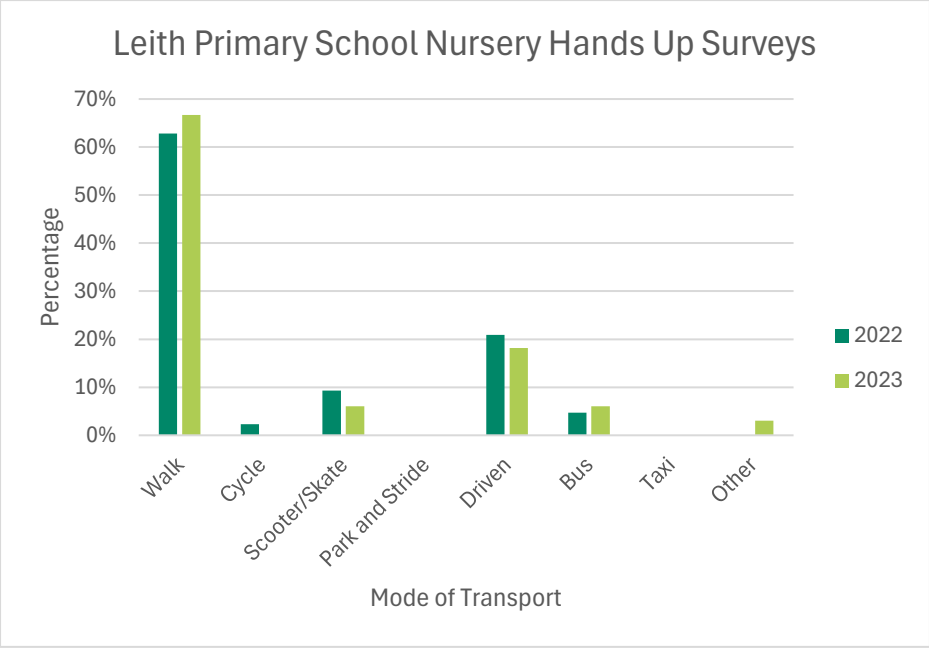


Figure 24: Leith Primary School Nursery Survey Comparison

Table 27 and Table 28 summarise the modes of transport used to travel to St Mary's RC (Leith) Primary School Nursery. The results are illustrated in Figure 25 and show that roughly two-thirds of pupils walk to school in both surveys.

Table 27: St Mary's RC (Leith) Primary School Nursery Survey Summary (2022)

	Walk	Cycle	Scooter/Skate	Park and Stride	Driven	Bus	Taxi	Other
Total	17	0	4	0	4	0	0	0
Percentage of total	68.0%	0.0%	16.0%	0.0%	16.0%	0.0%	0.0%	0.0%

Table 28: St Mary's RC (Leith) Primary School Nursery Survey Summary (2023)

	Walk	Cycle	Scooter/Skate	Park and Stride	Driven	Bus	Taxi	Other
Total	17	0	1	0	3	0	0	5
Percentage of total	65.4%	0.0%	3.8%	0.0%	11.5%	0.0%	0.0%	19.2%

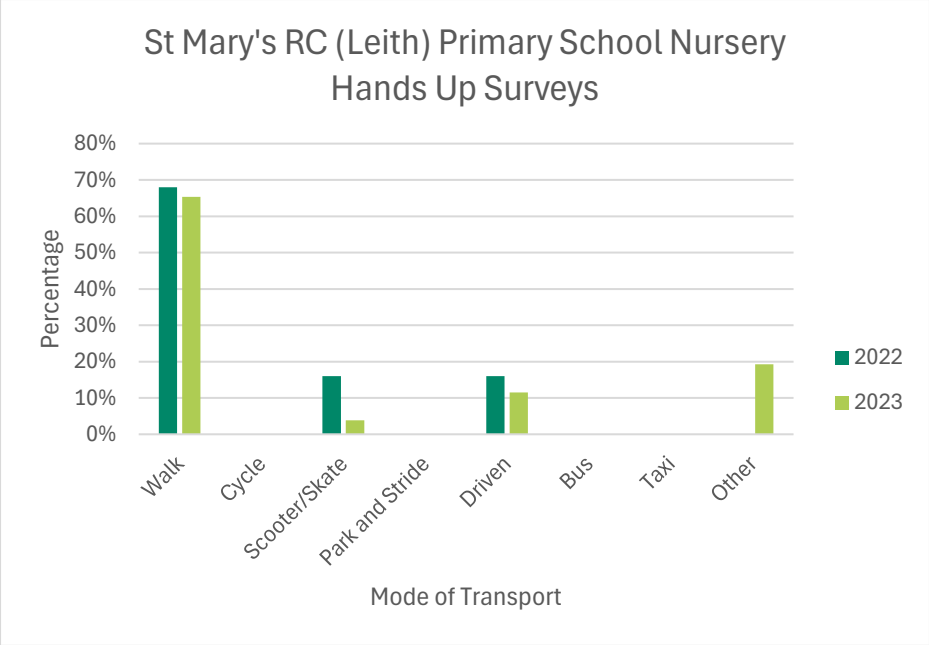


Figure 25: St Mary's RC (Leith) Primary School Nursery Survey Comparison