

Leith Connections

Baseline Data Collection – Summary Report

The City of Edinburgh Council

7th December 2023

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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 by AECOM between February and April 2023 as a baseline data set for the trial Low Traffic Neighbourhood (LTN) layout introduction.

Results from the following baseline surveys are summarised in this report:

- Automatic Traffic Counts (ATCs);
- Junction Turning Counts (JTCs);
- Pedestrian / Cycle Surveys;
- Leith Links Surveys
- Acoustic Surveys;
- Air Quality; and
- Hands Up School Surveys (*September 2022 data collected by City of Edinburgh Council*)

2. Automatic Traffic Counts

Automatic Traffic Counts were undertaken at the following locations for 24 hours per day between Friday 24th March and Thursday 30th March 2023:

- 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 2-1. Results are given for each of the 10 sites labelled 1-10. The following results are given:

- Average number of vehicles (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 speed (weekday) and the average northbound/eastbound PM speed (weekday);
- Average southbound/westbound AM peak speed (weekday) and the average southbound/westbound PM speed (weekday);

The AM and PM hour periods at the 10 sites were confirmed as a fixed hour of 07:45 to 08:45 (AM) and 16:00 to 17:00 (PM). Future reporting will compare against the same fixed peak period.

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

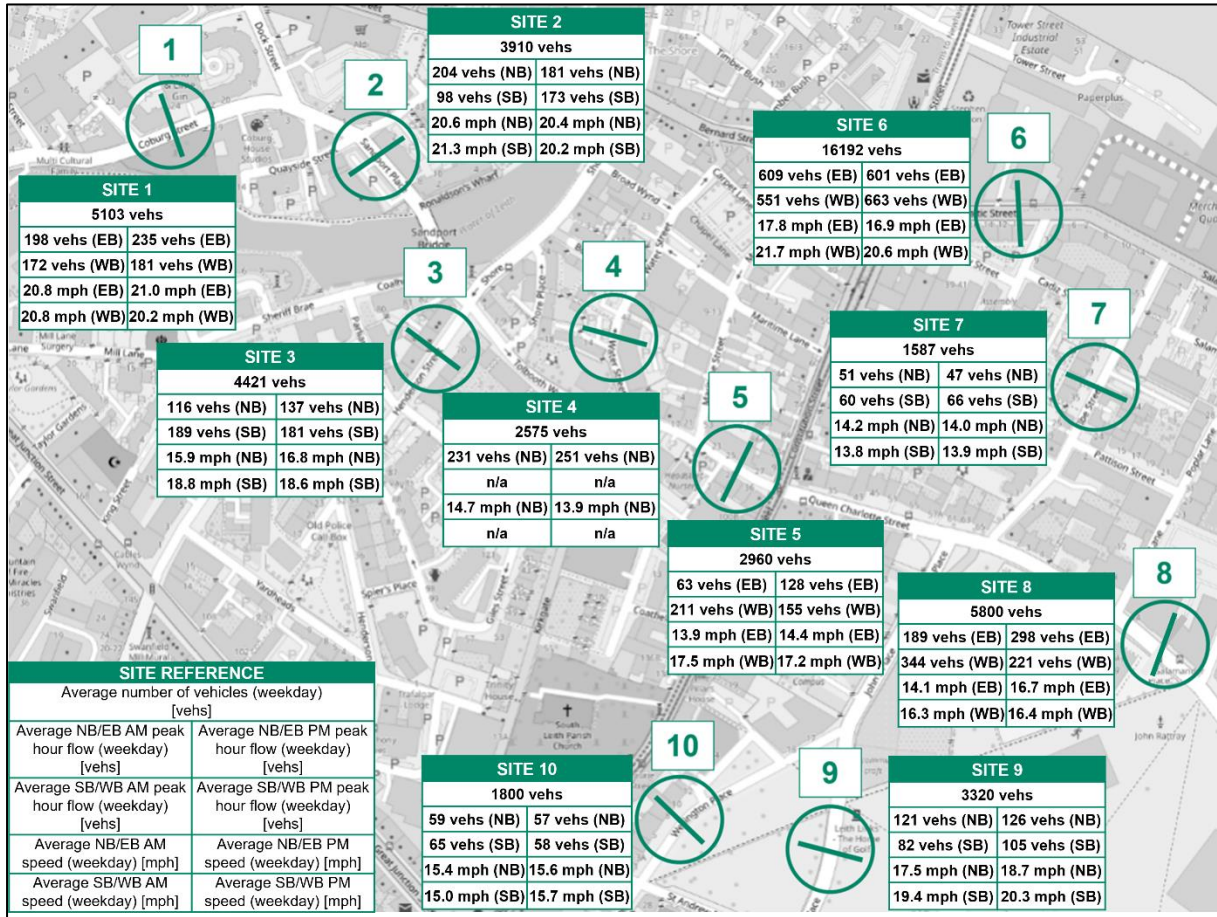


Figure 2-1 – Summary of ATC Surveys

3. Junction Turning Counts

Junction Turning Counts were undertaken at five junctions in the morning and in the afternoon on the 28th and 29th of March 2023. The data from 28th March has been used as it represents the busier day regarding the data collected. The AM and PM peak hour flows are summarised in Figure 3-2 to Figure 3-11 overleaf 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

The AM and PM hour periods at the 10 sites were confirmed as a fixed hour of 07:45 to 08:45 (AM) and 16:00 to 17:00 (PM). Future reporting will compare against the same fixed peak period.

An overview map of the five junctions is shown in Figure 3-1 below.

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

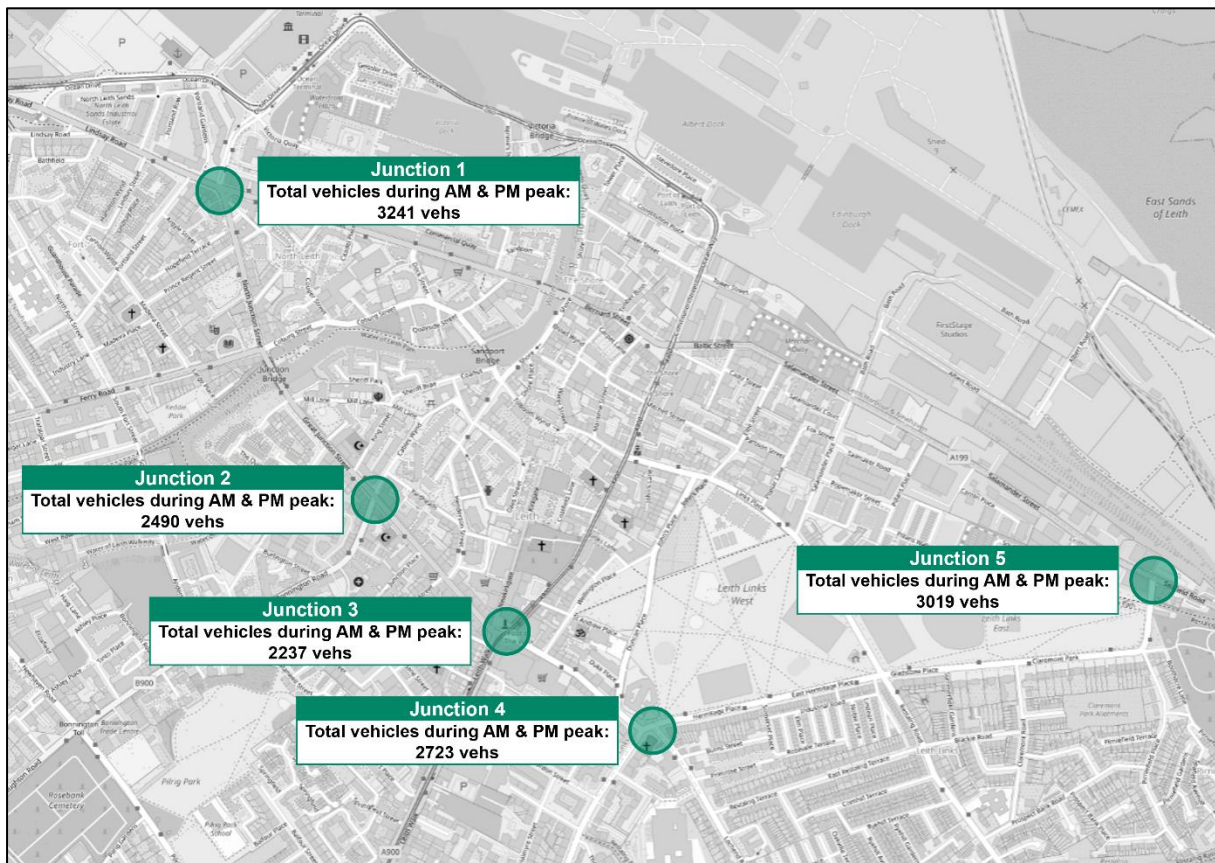


Figure 3-1 - Overview Map of Junction Turning Count Locations

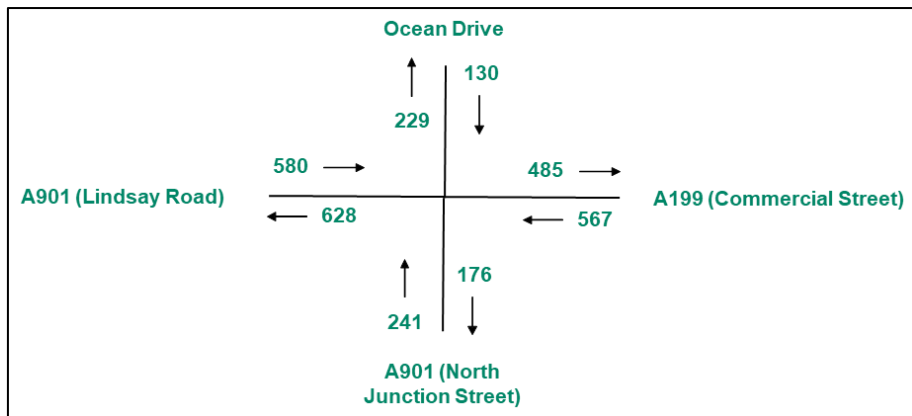


Figure 3-2 – Junction 1 Turning Counts - AM Peak

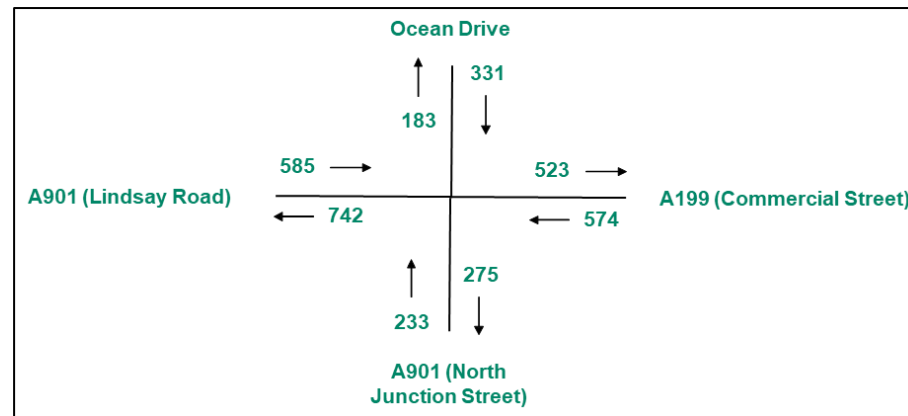


Figure 3-3 – Junction 1 Turning Counts - PM Peak

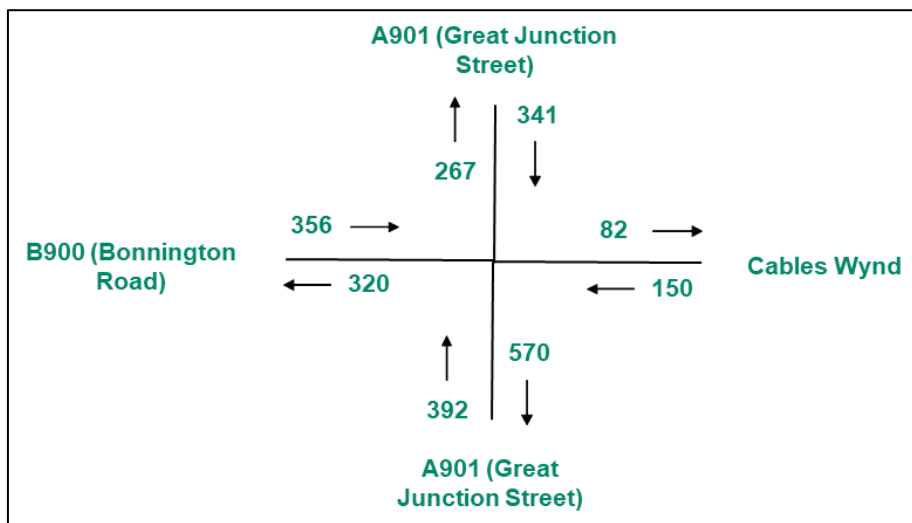


Figure 3-4 – Junction 2 Turning Counts - AM Peak

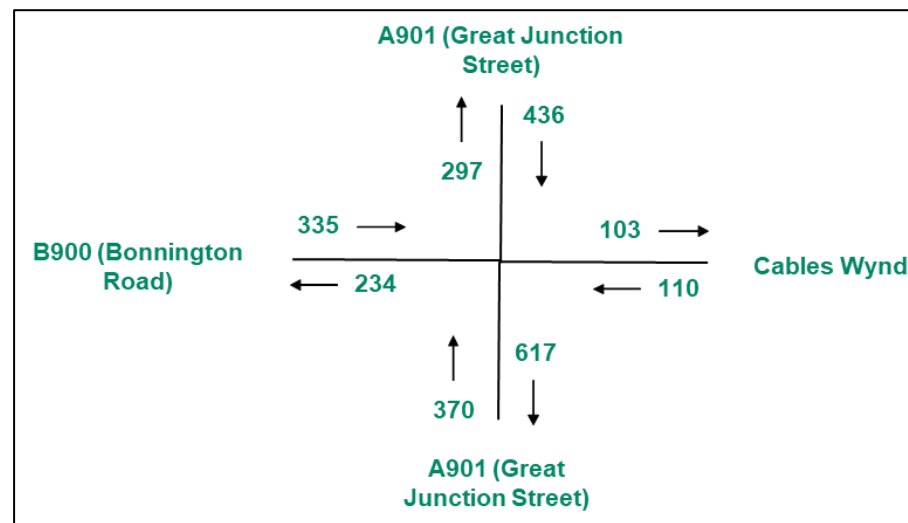


Figure 3-5 – Junction 2 Turning Counts - PM Peak

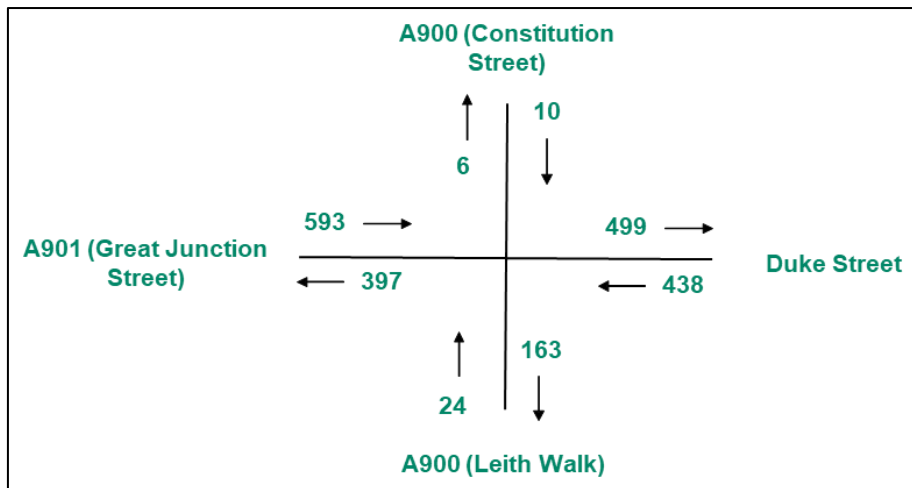


Figure 3-6 – Junction 3 Turning Counts - AM Peak

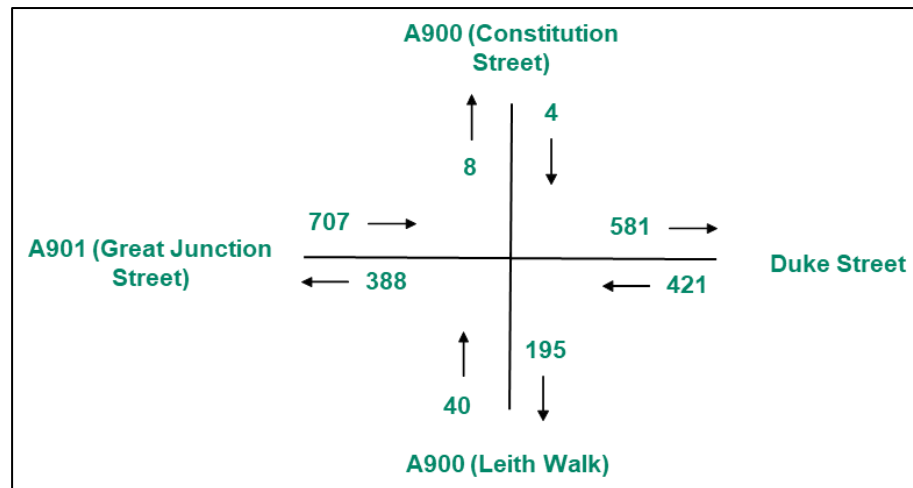


Figure 3-7 – Junction 3 Turning Counts - PM Peak

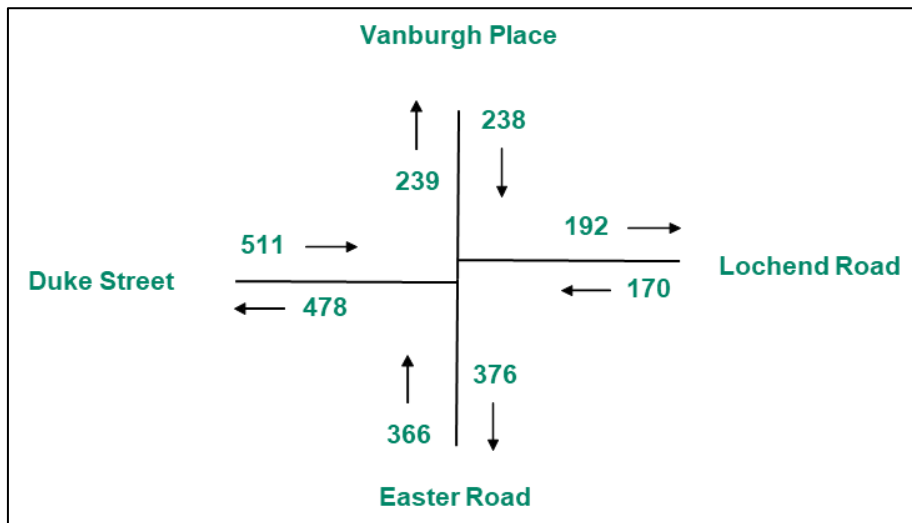


Figure 3-8 – Junction 4 Turning Counts - AM Peak

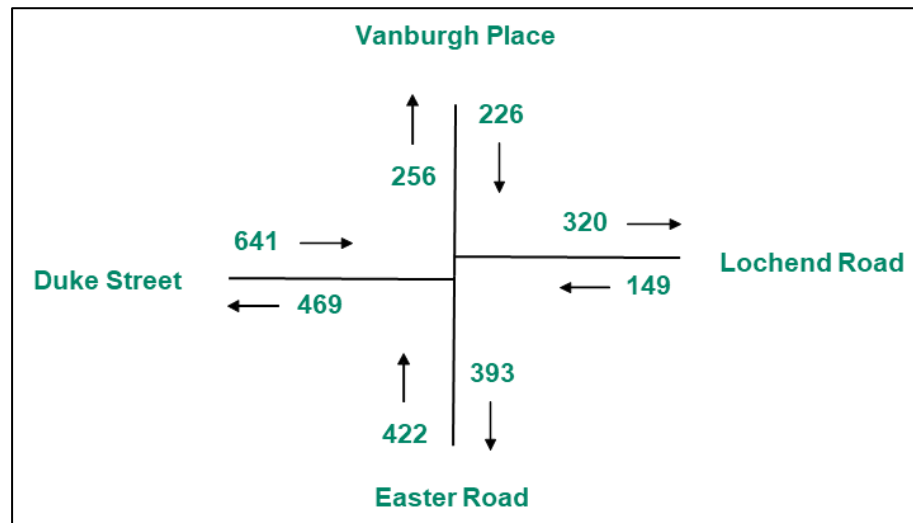


Figure 3-9 – Junction 4 Turning Counts - PM Peak

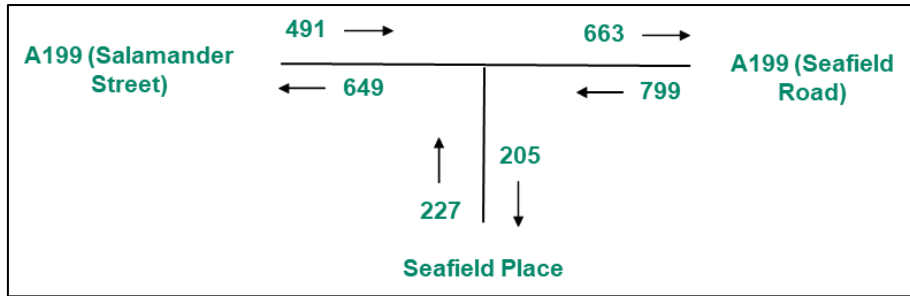


Figure 3-10 - Junction 5 Turning Counts - AM Peak

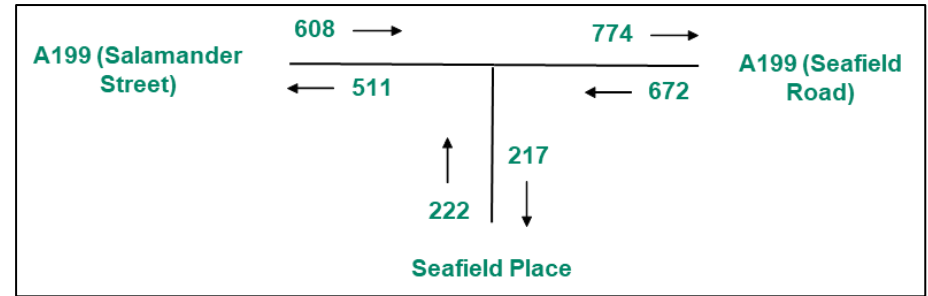


Figure 3-11 - Junction 5 Turning Counts - PM Peak

4. Pedestrian / Cycle Surveys

4.1 Pedestrian and Cycle Movements

Manual pedestrian and cycle surveys were undertaken at 11 sites in Leith, Edinburgh, during a 12-hour period on Tuesday 28th March 2023. Details of the 11 sites and their corresponding result summaries (figures) are given in Table 4.1 below.

Table 4.1 - 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 4-1
Site B	Sandport Place / Commercial Wharf / Water of Leith Path	Figure 4-2
Site C	Sandport Place / Shore / Tolbooth Wynd / Henderson Street	Figure 4-2
Site D	Shore at Broad Wynd	Figure 4-2
Site E	Queen Charlotte Street at Maritime Street	Figure 4-1
Site F	Duncan Place	Figure 4-1
Site G(i)	Links Gardens (north)	Figure 4-3
Site G(ii)	Links Gardens (mid-north)	Figure 4-3
Site G(iii)	Links Gardens (mid-south)	Figure 4-3
Site G(iv)	Links Gardens (south)	Figure 4-3
Site H	Leith Links (East / South / West) / South Carron Wynd	Figure 4-1

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)

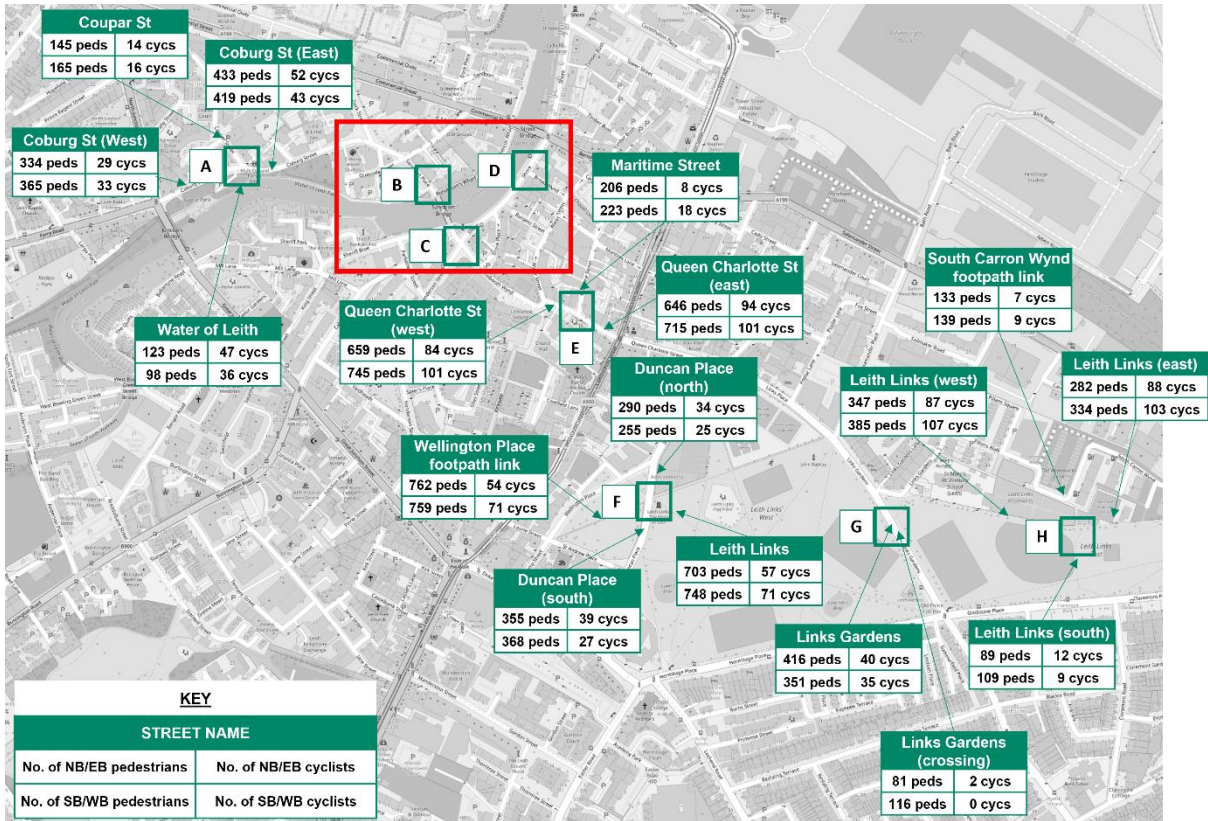


Figure 4-1 – General Pedestrian and Cycle Movements

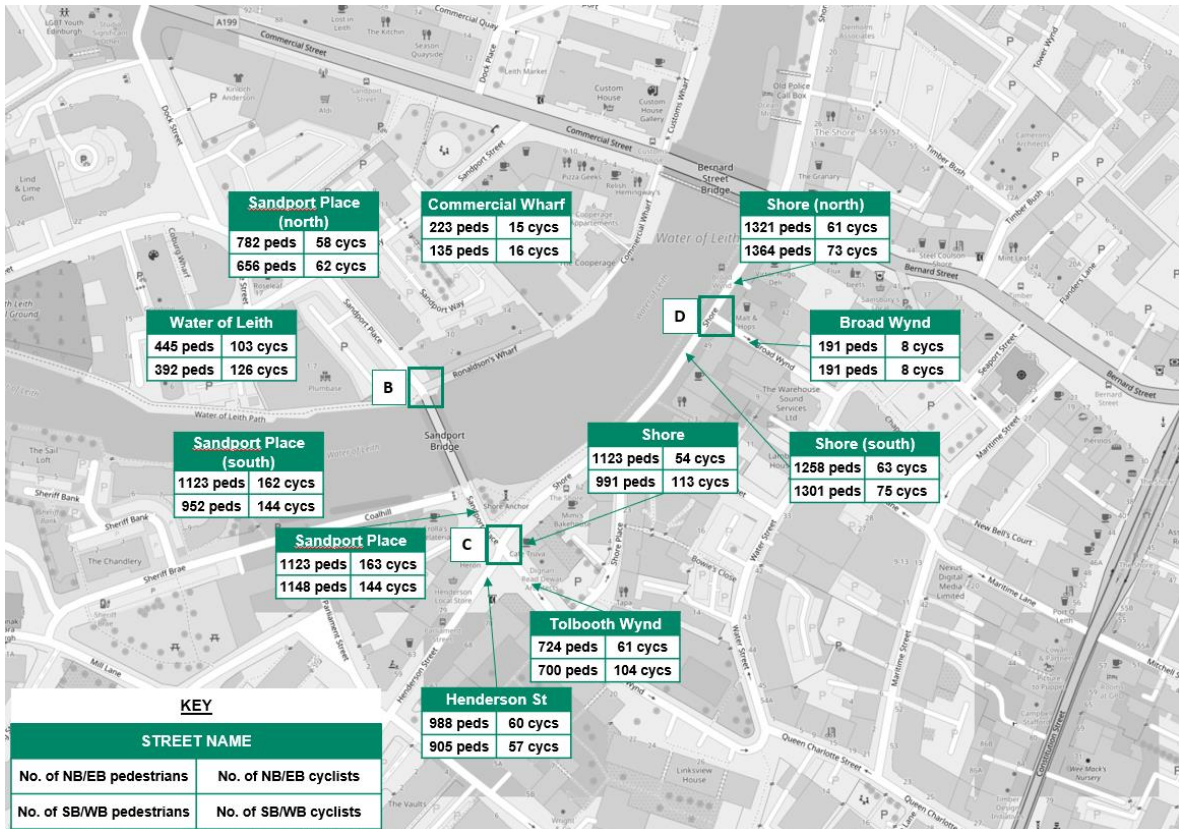


Figure 4-2 – Shore Pedestrian and Cycle Movements

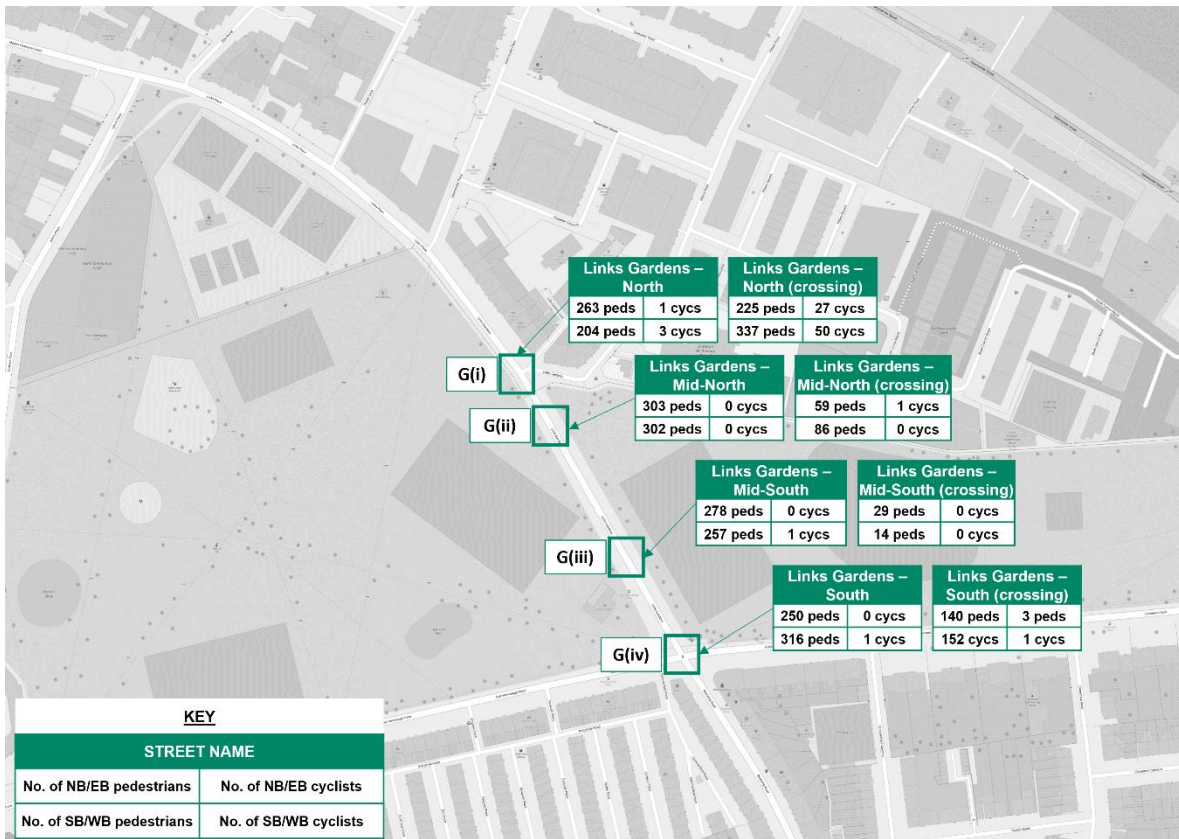


Figure 4-3 – Links Gardens Pedestrian and Cycle Movements

4.2 Pedestrian and Cycle Tracing

An overview of the pedestrian and cycle tracing is given below. The tracing surveys were undertaken alongside the pedestrian and cycle movement surveys detailed in Section 4.1 on Tuesday 28th March 2023. Movement tracing maps are shown in Table 4.2 below.

Table 4.2 - Pedestrian / Cycle Movement Tracing (all sites)

Site Reference	Pedestrian Tracing	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 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)



5. 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 5.1). This data was collected during a 12-hour period on Tuesday 28th March 2023.

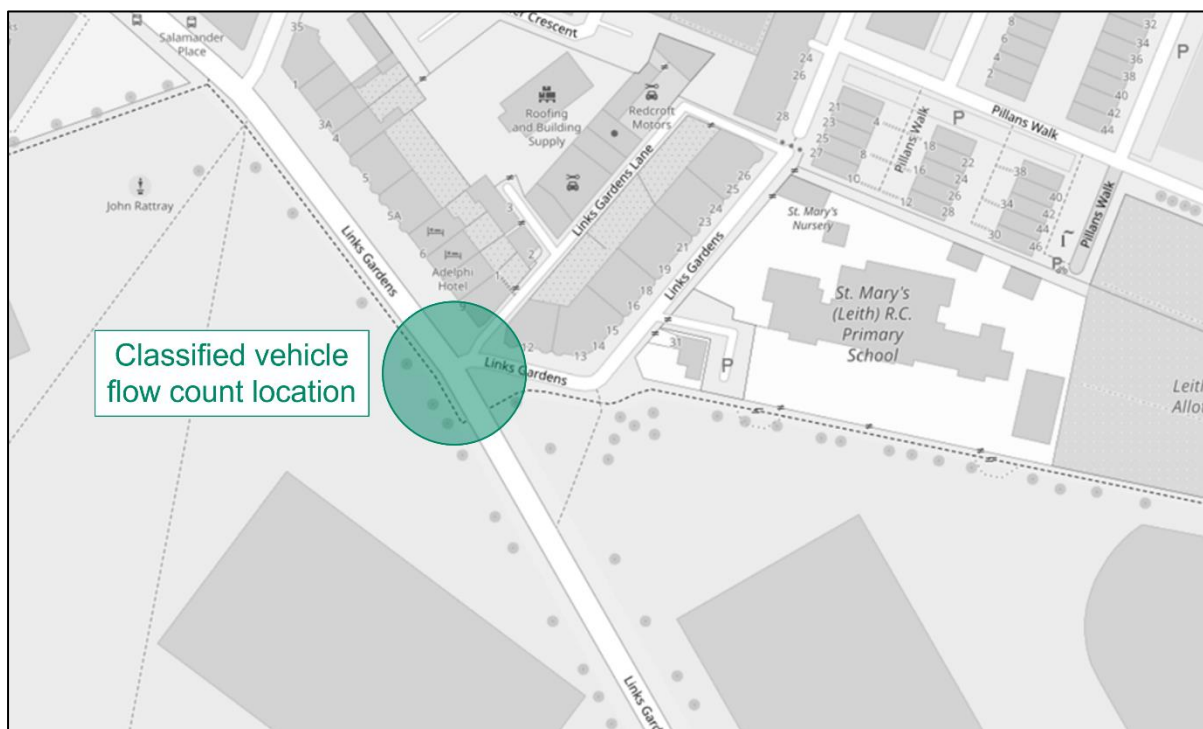


Figure 5-1 - Leith Links Classified Vehicle Survey Location

A summary of the results is given in Table 5.1 below.

Table 5.1 - Leith Links Classified Vehicle Survey Results

Direction	Peak Hour	Bicycle	Motorcycle	Cars/Taxis	LGVs	HGVs	Total Vehicles
Northbound	08:15 to 09:15	10	3	331	37	6	387
	17:00 to 18:00	2	0	188	12	3	205
Southbound	08:15 to 09:15	1	1	126	23	6	156
	16:15 to 17:15	0	0	263	45	4	311

6. Acoustic Surveys

Noise monitoring was undertaken to coincide with selected automatic traffic counts (ATCs). Measurements were conducted using the shortened Calculation of Road Traffic Noise (CRTN¹) method. A total of five locations were monitored; A, B, C, D, and E where ATC's 1, 3, 4, 6 and 8, respectively, were simultaneously surveyed. An additional site, site F, on Great Junction Street was also monitored. Monitoring was conducted at different times on two separate days at the same locations to consider variations that may occur on specific days or at specific times.

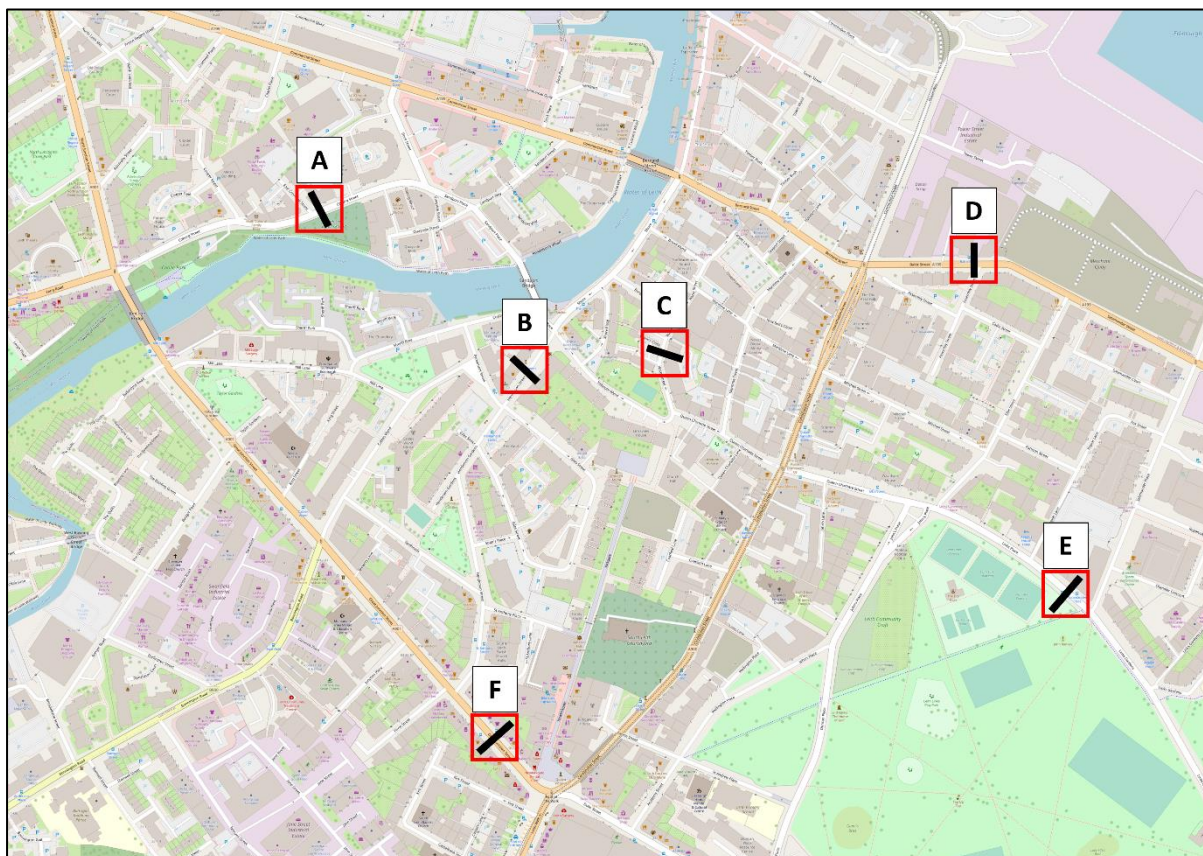


Figure 6-1 – ATC noise survey locations

The results of the noise monitoring are given in Table 6.1. The results show a range of L_{Aeq} values between 62 dB and 72 dB, L_{A10} values ranged from 66 dB to 74 dB, L_{A90} values were range between 46 dB and 62 dB, and $L_{A_{fmax}}$ values ranged from 83 dB to 101 dB.

The dominant sound source at all locations was road traffic, although several other extraneous sources also contributed to the sound levels at all locations. This mainly included sounds from pedestrians.

The sound levels at locations D and F are considered typical for roadside locations next to a busy road with a 20-mph speed limit in an urban area. The sound levels at A, B, C and E are considered typical for roadside locations along a road with a 20-mph speed limit in a residential area.

For reference, Figure 6-2 shows typical traffic noise levels on certain types of roads. This information was taken from BS 8233: 2014 'Guidance on sound insulation and noise reduction for buildings.'

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

Table 6.1 - Noise monitoring results

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	29/03/2023 10:00 – 13:00	68	72	51	92
		31/03/2023 14:00 – 17:00	70	74	55	97
B – Henderson Street	Façade	29/03/2023 10:00 – 13:00	63	67	50	83
		31/03/2023 13:55 – 16:55	64	68	53	85
C – Water Street	Free-field	29/03/2023 10:00 – 13:00	64	69	46	87
		31/03/2023 13:55 – 16:55	67	71	52	90
D – Baltic Street	Façade	29/03/2023 13:50 – 16:50	71	74	59	91
		31/03/2023 10:36 – 13:36	70	73	59	88
E – Leith Links	Free-field	29/03/2023 13:35 – 16:35	62	66	53	84
		31/03/2023 10:00 – 13:00	62	66	52	89
F – Great Junction Street	Free-field	29/03/2023 14:05 – 17:05	72	74	62	101
		31/03/2023 10:00 – 13:00	71	73	62	99

Typical traffic noise levels measured approximately 1 m from the facade	
Situation	dB L _{Aeq, 16h}
At 20 m from the edge of a busy motorway carrying many heavy vehicles; average traffic speed 100 km/h; intervening ground turfed	78
At 20 m from the edge of a busy main road through a residential area; average traffic speed 50 km/h; intervening ground paved	68
On a residential road parallel to a busy main road and screened by the houses from the main road traffic; free flowing traffic	58
<i>NOTE Values are for dry road.</i>	

Figure 6-2 - Typical traffic noise levels measured from building façade.

7. Air Quality Monitoring

Diffusion tube surveys have been undertaken at 27 locations for a six-month period between August 2022 and January 2023 to establish baseline nitrogen dioxide (NO₂) concentrations (µg/m³) around Leith, ahead of implementation of a Low Traffic Neighbourhood (LTN).

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 m – 3.0 m (representing ground floor exposure).

Outlier values were noted in the monitored data. The results represent baseline concentrations for 2022 with the process of projection, annualisation and bias adjustment followed in line with appropriate Defra TG.22 guidance and using CoEC continuous monitoring data to create a robust set of results, considered representative of the Leith area.

Final results thus derived are presented in Table 7.1. Of the results, there are no diffusion tube locations where the adjusted annual mean NO₂ concentration was greater than the Air Quality Strategy Objective (AQO) of 40 µg/m³. The highest concentration recorded was 25.8 µg/m³ at Lei_27, Easter Road. The hourly mean air quality standard for NO₂ (200 µg/m³) is typically considered at risk of an exceedance when the annual mean concentration is in excess of 60 µg/m³. As there were no diffusion tube sites where the annual mean NO₂ concentration exceeded 60 µg/m³, the 1-hour mean NO₂ AQO is therefore anticipated to have been achieved at all sites.

Table 7.1 Averaged, annualised and bias adjusted nitrogen dioxide diffusion tube survey results

Tube	Location	Co-located?	Bias Adjusted and Annualised Mean 2022 (µg/m ³)
Lei_1	Ferry Road	No	23.1
Lei_2	A901 North Junction Street	No	22.1
Lei_3	Coburg Street	No	15.4
Lei_4	Dock St	No	17.9
Lei_5	Henderson St	No	18.0
Lei_6	Shore	No	19.0
Lei_7	Queen Charlotte Street	No	16.1
Lei_8	Elbe Street	No	15.4
Lei_9	Poplar Lane	No	12.9
Lei_10	Salamander Place	No	17.1
Lei_11	Chandler Crescent	No	13.6
Lei_12	Links Gardens	No	15.5
Lei_13	Seafield Place	No	16.3
Lei_14	B900 Bonnington Road	No	16.8
Lei_15	A910 Great Junction Street	No	19.8
Lei_16	Wellington Place	No	15.1
Lei_17	Duke Street	No	24.8
Lei_18	East Hermitage Place	No	18.2
Lei_19	Lochend Road	No	15.1
Lei_20	A901 Lindsay Road	Yes*	18.2
Lei_21	Commercial St	Yes	21.1
Lei_22	A199 Salamander Street	Yes	22.2

Tube	Location	Co-located?	Bias Adjusted and Annualised Mean 2022 ($\mu\text{g}/\text{m}^3$)
Lei_23	A199 Salamander Street	Yes	24.6
Lei_24	Restalrig Road	Yes*	17.7
Lei_25	Duncan Place	No	15.3
Lei_26	Great Junction Street	No	20.7
Lei_27	Easter Road	No	25.8

* It was attempted to co-locate with CoEC's monitors, however, the CoEC sites were not found.

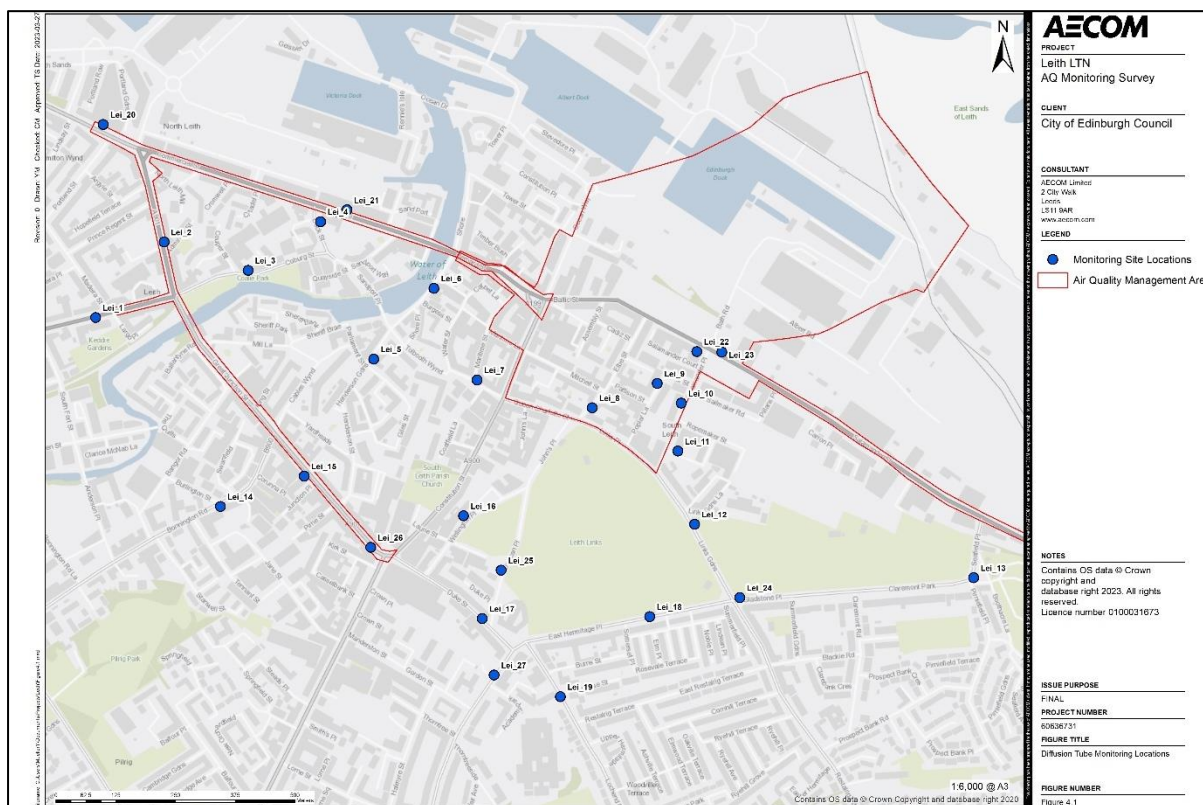
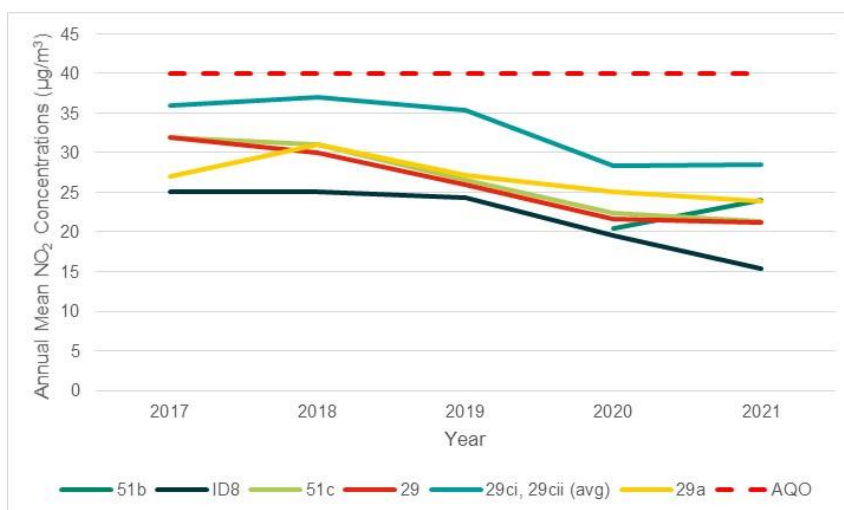


Figure 7-1 – Diffusion tube survey locations

a)



b)

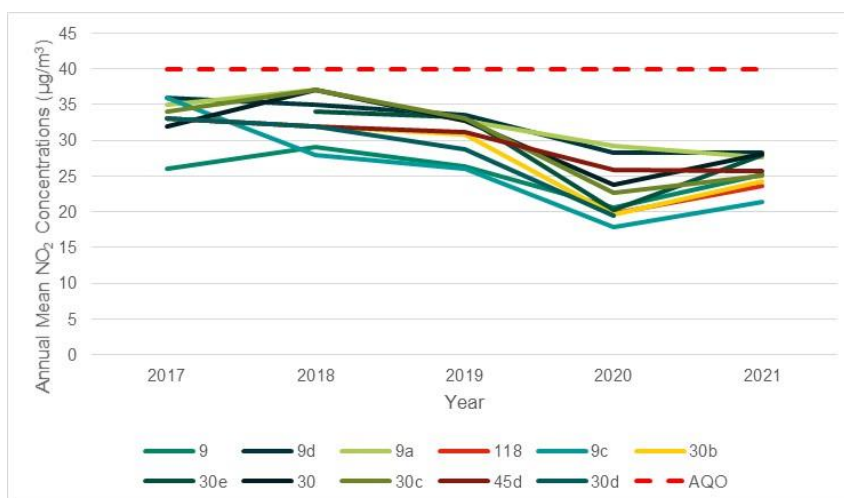


Figure 7.2 Five-year trend in Annual Mean NO₂ Concentrations at non-automatic monitors located in the Salamander Street AQMA (a) and Great Junction AQMA (b).

8. Hands-up School Surveys

Annual surveys are conducted at six schools and nurseries within the project area to determine how the pupils travel to school. The following tables include the September 2022 results to be used as baseline data for the monitoring and evaluation.

Table 8.1 gives a summary of the totals for each of the specified modes of transport for Leith Primary School. The results are illustrated in Figure 8-1 and show that walking is the dominant mode of transport. Travel by public transport is low and has similar mode share as driven, park and stride and scooter/skate.

Table 8.1 - Leith Primary School Survey Summary

	Walk	Cycle	Scooter/Skate	Park and Stride	Driven	Bus	Taxi	Other
Total	146	17	22	30	40	1	3	0
Percentage of total	69.6%	3.4%	6.8%	8.0%	7.2%	4.6%	0.0%	0.4%

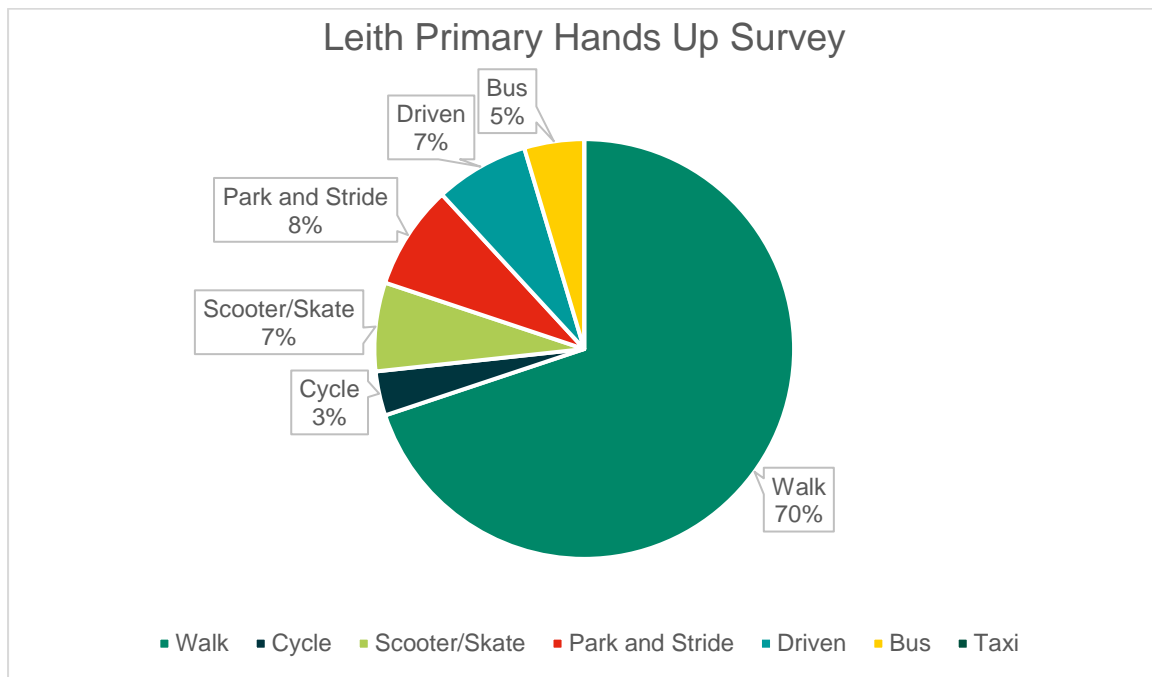


Figure 8-1 - Leith Primary School Survey Summary Chart

Table 8.2 gives a summary of the totals for each of the specified modes of transport for St Mary's Primary (Leith). The results are illustrated in Figure 8-2 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.

Table 8.2 - St Mary's Primary (Leith) School Survey Summary

	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%

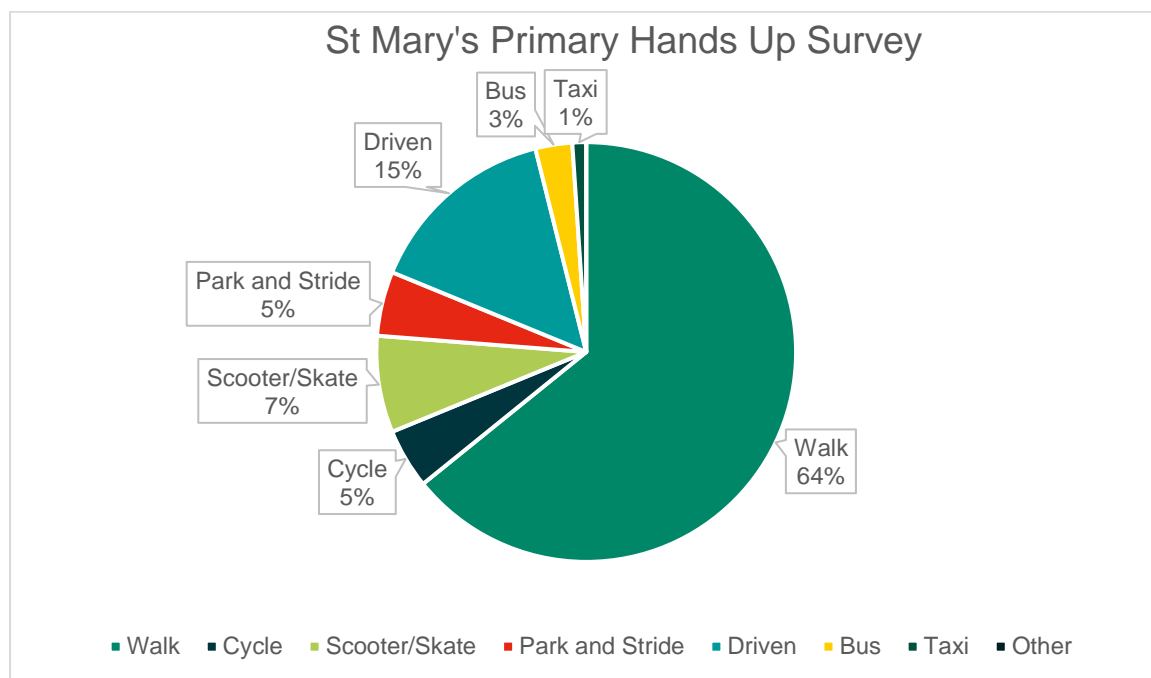


Figure 8-2 - St Mary's Primary (Leith) School Survey Summary Chart

Table 8.3 summarises the mode of transport used by pupils for Leith Academy. The results are illustrated in Figure 8-3 and show walking is the main mode of travel to school. Bus is the second highest mode of transport at 20% mode share and less than 1% of pupils travel by taxi, scooter/skate or park and stride.

Table 8.3 - Leith Academy School Survey Summary

	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%

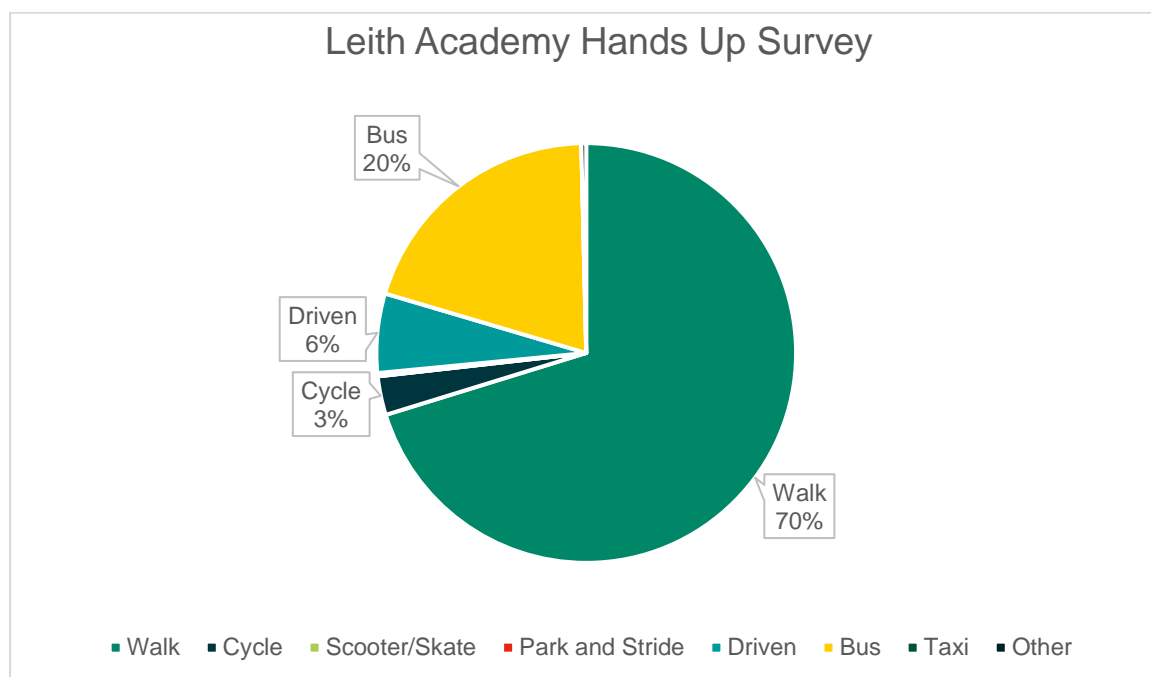


Figure 8-3 - Leith Academy School Survey Summary Chart

Table 8.4 gives a summary of the totals for each of the specified modes of transport for Leith Academy Community Nursery. The results are illustrated in Figure 8-4 and show walking is the dominant mode of travel. It must be noted, however, that only 5 pupils responded to this survey.

Table 8.4 - Leith Academy Community Nursery Survey Summary

	Walk	Cycle	Scooter/Skate	Park and Stride	Driven	Bus	Taxi	Other
Total	2	1	0	0	1	1	0	0
Percentage of total	40.0%	20.0%	0.0%	0.0%	20.0%	20.0%	0.0%	0.0%

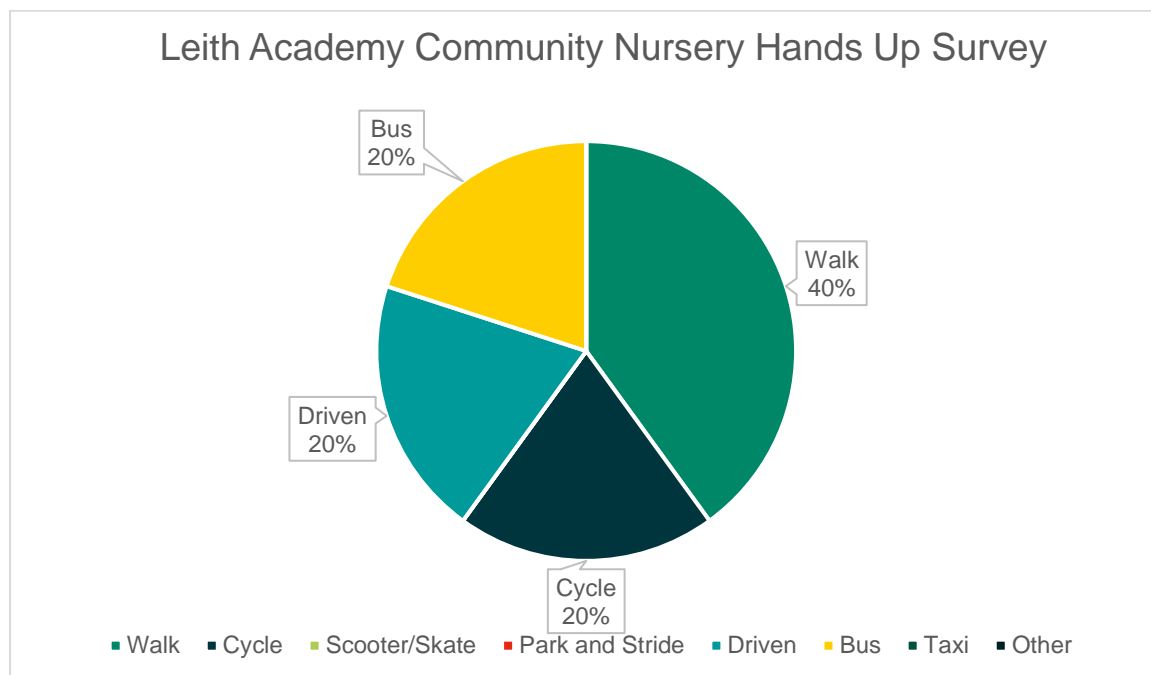


Figure 8-4 - Leith Academy Community Nursery Survey Summary Chart

Table 8.5 summarises the mode of transport for Leith Primary School Nursery. The results are illustrated in Figure 8-5 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. The second highest mode share represents pupils being driven to school. Travel by public transport and cycling is low.

Table 8.5 - Leith Primary School Nursery Survey Summary

	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%

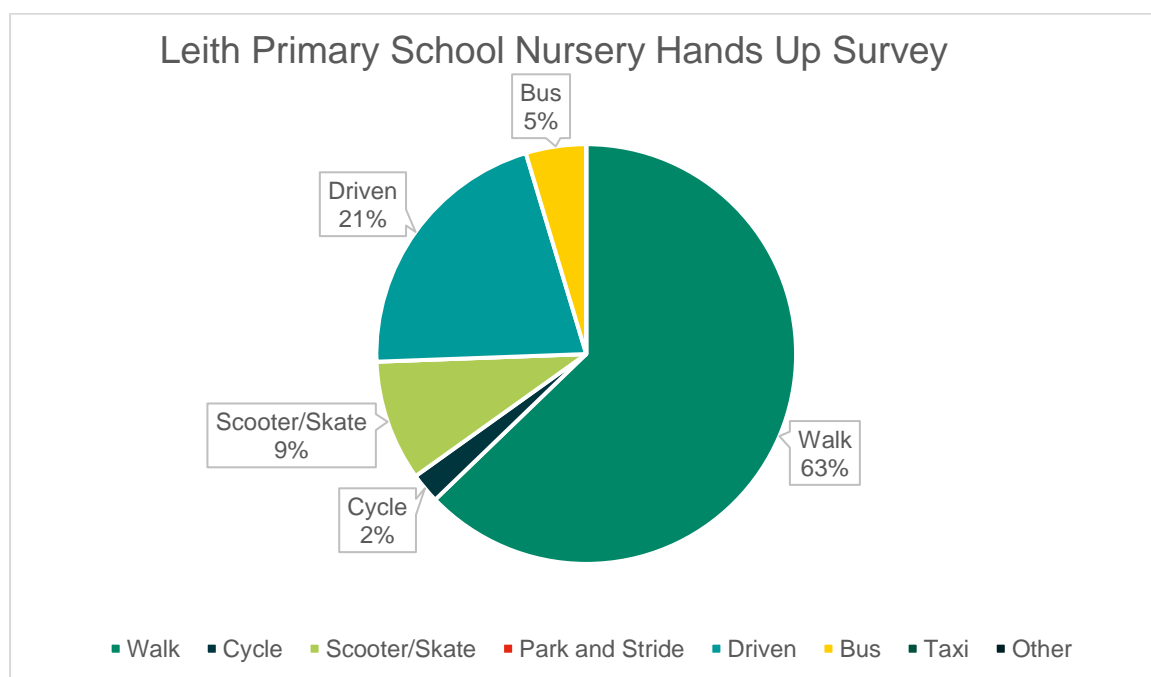


Figure 8-5 - Leith Primary School Nursery Survey Summary Chart

Table 8.6 summarises the mode of transport for Lorne Primary School Nursery. The results are illustrated in Figure 8-6 and show walking is the dominant mode of travel. Out of the 15 pupils who responded to the survey, two thirds walk to school. The second highest mode share represents pupils being driven to school.

Table 8.6 - Lorne Primary School Nursery Survey Summary

	Walk	Cycle	Scooter/Skate	Park and Stride	Driven	Bus	Taxi	Other
Total	10	0	1	1	2	1	0	0
Percentage of total	66.7%	0.0%	6.7%	6.7%	13.3%	6.7%	0.0%	0.0%

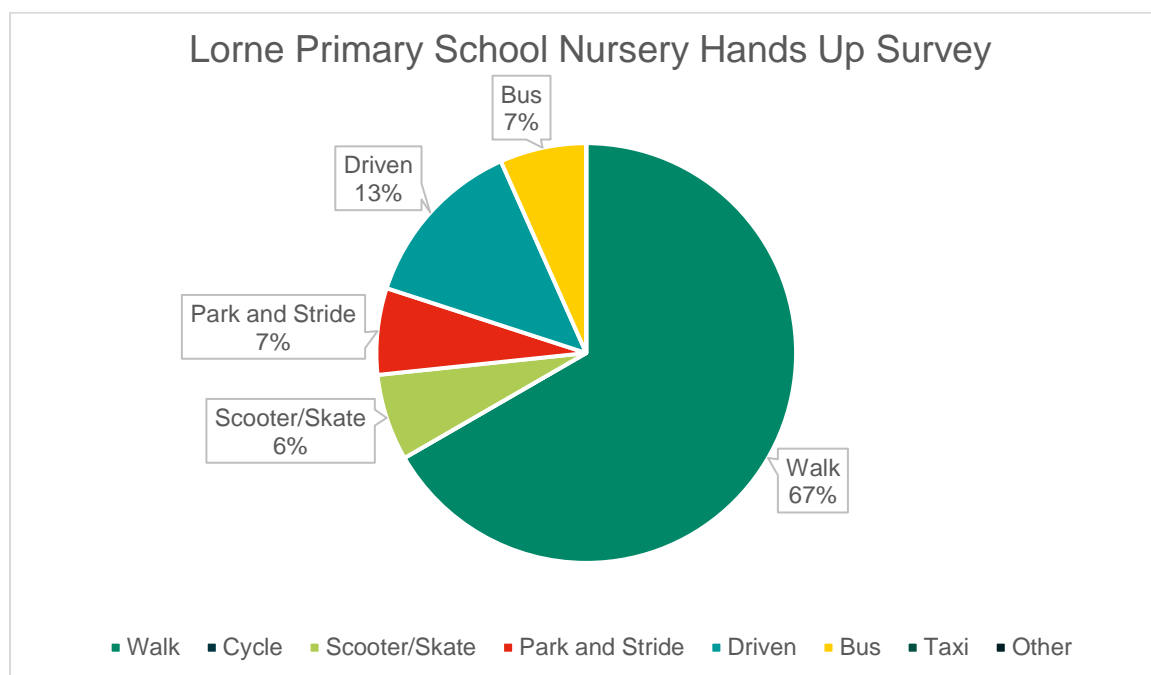


Figure 8-6 - Lorne Primary School Nursery Survey Summary Chart

Table 8.7 summarises the mode of transport used to travel to St Mary’s RC (Leith) Primary School Nursery. The results are illustrated in Figure 8-7 and show that, out of the 25 pupils who responded to the survey, two thirds walk to school. Scooter/skate and driven are the other two modes used by pupils.

Table 8.7 - St Mary's RC (Leith) Primary School Nursery Survey Summary

	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%

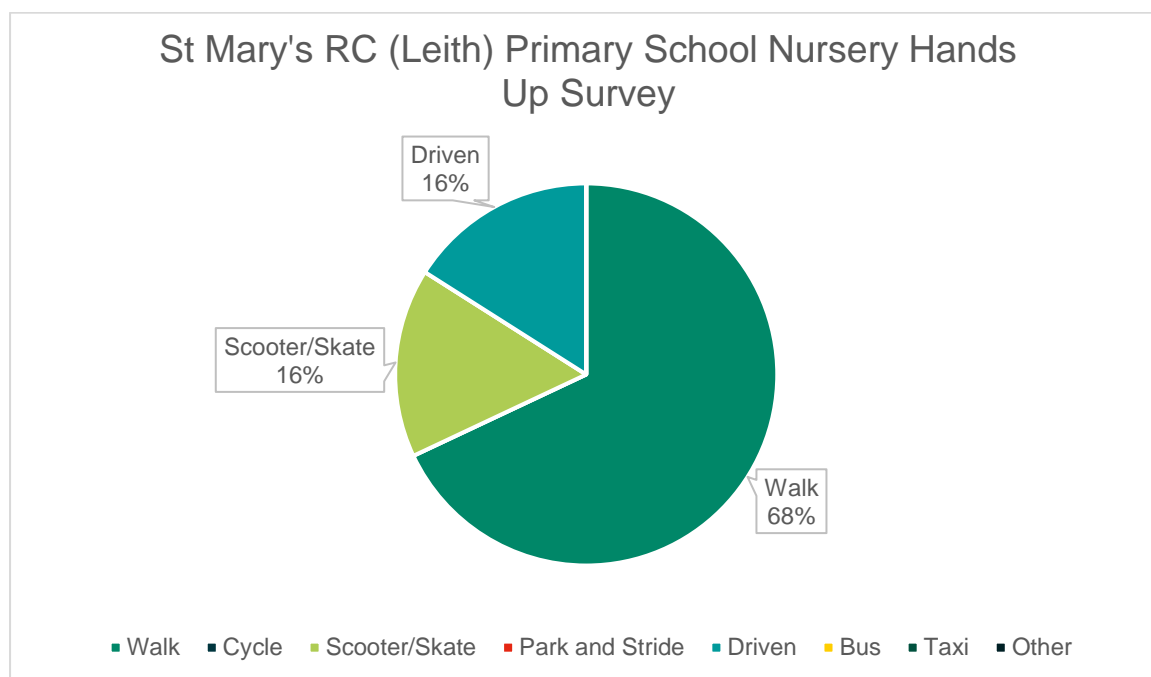


Figure 8-7 - St Mary's RC (Leith) Primary School Nursery Survey Summary Chart

