

Technical Note



PROJECT:	Scraptoft North Strategic Development Area
SUBJECT:	<u>Provisional</u> Operational Phase Air Quality Assessment
JOB NO.:	ST15451
DATE:	20th September 2018
PREPARED BY:	Mariam Weatherley – Principal Environmental Scientist

The following note sets out the preliminary results of the assessment of road traffic emissions during the operational phase of the proposed Scraptoft North Strategic Development Area (the 'Proposed Development'). Please note that the results of this assessment are provisional and subject to change. The assessment is based on traffic data provided by RPS (the transport consultant) on 31st August 2018 (enclosed as Appendix A).

To assess the impacts associated with road traffic emissions during the operational phase assessment, detailed air dispersion modelling has been undertaken. The impacts have been assessed in accordance with guidance from Environmental Protection UK (EPUK) and the IAQM.

The air dispersion model ADMS-Roads (CERC, Version 4.1) has been used to assess the potential impact of development generated traffic on air quality at existing sensitive receptor locations. The air dispersion model has been used to predict NO₂, PM₁₀ and PM_{2.5} concentrations, as these are the pollutants considered most likely to exceed the objectives and limit values.

Preliminary air dispersion modelling has been carried out to estimate pollutant concentrations, due to road traffic emissions, for the following scenarios:

- 2023 opening year without the Proposed Development in place;
- 2023 opening year with the Proposed Development in place;
- 2028 future year without the Proposed Development in place;
- 2028 future year with the Proposed Development in place;
- 2031 future year without the Proposed Development in place; and
- 2031 future year with the Proposed Development in place.

Twelve representative existing sensitive receptor (ESR) locations (identified as ESR 1 to ESR 12) have been considered in the air quality assessment. These are residential in nature and have been selected as they are locations at which the annual mean Air Quality Objectives (AQOs) apply. The locations of the ESRs were determined following consultation with the Environmental Health Officer at Harborough District Council, and are illustrated on Drawing ST15451-008 (enclosed). Details of the receptors considered are provided in Table 1.

Receptor	Address	Grid Reference		Inside AQMA	Receptor Type
		Eastings	Northing		
ESR 1	260 Hamilton Lane	464463	306398	No	Residential
ESR 2	118 New Romney Crescent	464470	306073	No	Residential
ESR 3	Stable Block, Hamilton Lane	464464	305790	No	Residential
ESR 4	Long Cottage, 2 Scraftoft Rise	464587	305720	No	Residential
ESR 5	1 Main Street	464687	305765	No	Residential
ESR 6	51 New Romney Crescent	464214	305999	No	Residential
ESR 7	379 Scraftoft Lane	464720	305496	No	Residential
ESR 8	3 New Romney Crescent	464174	305582	No	Residential
ESR 9	534 Uppingham Road	463962	304271	Yes*	Residential
ESR 10	580 Uppingham Road	464457	304140	No	Residential
ESR 11	58a Keyham Lane	463717	306433	No	Residential
ESR 12	39 Hanover Close	462646	306079	No	Residential

* Inside Leicester AQMA

The assessment has been carried out for twelve ESR locations. Tables 2 to 4 show the changes in NO₂ concentrations for the 2023 opening year, 2028 future year and 2031 future year for both the 'Without Development' and 'With Development' scenarios.

NO ₂	2023 Without Development	2023 With Development	As % AQAL	Change	% Change	Impact
ESR 1	21.84	21.93	54.83	0.09	0.23	Negligible
ESR 2	22.58	22.69	56.73	0.11	0.28	Negligible
ESR 3	21.88	21.99	54.98	0.11	0.27	Negligible
ESR 4	23.31	23.59	58.98	0.28	0.70	Negligible
ESR 5	22.44	22.66	56.65	0.22	0.55	Negligible
ESR 6	22.42	22.48	56.20	0.06	0.15	Negligible
ESR 7	22.89	23.33	58.33	0.44	1.10	Negligible
ESR 8	23.61	23.74	59.35	0.13	0.32	Negligible
ESR 9	24.18	24.20	60.50	0.02	0.05	Negligible
ESR 10	25.69	25.73	64.33	0.04	0.10	Negligible
ESR 11	22.99	23.03	57.58	0.04	0.10	Negligible
ESR 12	23.25	23.25	58.13	0.00	0.00	Negligible

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NO ₂	2028 Without Development	2028 With Development	As % AQAL	Change	% Change	Impact
ESR 1	19.25	19.31	48.28	0.06	0.15	Negligible
ESR 2	19.72	20.02	50.05	0.30	0.75	Negligible
ESR 3	19.27	19.39	48.48	0.12	0.30	Negligible
ESR 4	20.25	20.57	51.43	0.32	0.80	Negligible
ESR 5	19.66	19.71	49.28	0.05	0.13	Negligible
ESR 6	19.62	19.93	49.83	0.31	0.77	Negligible
ESR 7	20.17	20.42	51.05	0.25	0.63	Negligible
ESR 8	20.40	20.93	52.33	0.53	1.33	Negligible
ESR 9	20.77	20.82	52.05	0.05	0.13	Negligible
ESR 10	21.77	21.86	54.65	0.09	0.23	Negligible
ESR 11	20.02	20.28	50.70	0.26	0.65	Negligible
ESR 12	20.18	20.29	50.73	0.11	0.27	Negligible

NO ₂	2031 Without Development	2031 With Development	As % AQAL	Change	% Change	Impact
ESR 1	18.56	18.67	46.68	0.11	0.28	Negligible
ESR 2	18.99	19.39	48.48	0.40	1.00	Negligible
ESR 3	18.58	18.72	46.80	0.14	0.35	Negligible
ESR 4	19.44	19.87	49.68	0.43	1.08	Negligible
ESR 5	18.92	19.06	47.65	0.14	0.35	Negligible
ESR 6	18.89	19.31	48.28	0.42	1.05	Negligible
ESR 7	19.37	19.71	49.28	0.34	0.85	Negligible
ESR 8	19.59	20.30	50.75	0.71	1.78	Negligible
ESR 9	19.90	19.98	49.95	0.08	0.20	Negligible
ESR 10	20.79	20.91	52.28	0.12	0.30	Negligible
ESR 11	19.24	19.60	49.00	0.36	0.90	Negligible
ESR 12	19.38	19.53	48.83	0.15	0.38	Negligible

A sensitivity analysis has also been carried out using the 2017 vehicle emission factors and background pollutant concentrations throughout (i.e. assuming no future improvement in background air quality or vehicle emissions). Tables 5-7 present the results of the sensitivity analysis for NO₂. This approach is considered to be overly conservative, as it is likely there will be some improvement in the future.

Impacts for PM₁₀ and PM_{2.5} are predicted to be negligible at all ESR locations in both the air quality assessment and sensitivity analysis.

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Table 5: Changes in NO ₂ concentrations for 2023 opening year with and without the Proposed Development						
NO ₂	2023 Without Development	2023 With Development	As % AQAL	Change	% Change	Impact
ESR 1	26.90	27.03	67.58	0.13	0.33	Negligible
ESR 2	28.21	28.37	70.93	0.16	0.40	Negligible
ESR 3	26.97	27.13	67.83	0.16	0.40	Negligible
ESR 4	29.16	29.59	73.98	0.43	1.08	Negligible
ESR 5	27.83	28.17	70.43	0.34	0.85	Negligible
ESR 6	27.95	28.03	70.08	0.08	0.20	Negligible
ESR 7	28.61	29.31	73.28	0.70	1.75	Negligible
ESR 8	29.92	30.12	75.30	0.20	0.50	Negligible
ESR 9	31.28	31.31	78.28	0.03	0.07	Negligible
ESR 10	33.96	34.01	85.03	0.05	0.12	Negligible
ESR 11	28.72	28.78	71.95	0.06	0.15	Negligible
ESR 12	29.12	29.12	72.80	0.00	0.00	Negligible

Table 6: Changes in NO ₂ concentrations for 2028 future year with and without the Proposed Development						
NO ₂	2028 Without Development	2028 With Development	As % AQAL	Change	% Change	Impact
ESR 1	26.95	27.10	67.75	0.15	0.38	Negligible
ESR 2	28.30	29.01	72.53	0.71	1.78	Negligible
ESR 3	27.03	27.29	68.23	0.26	0.65	Negligible
ESR 4	29.32	30.06	75.15	0.74	1.85	Negligible
ESR 5	27.95	28.07	70.18	0.12	0.30	Negligible
ESR 6	28.02	28.76	71.90	0.74	1.85	Negligible
ESR 7	29.32	29.88	74.70	0.56	1.40	Negligible
ESR 8	30.08	31.31	78.28	1.23	3.08	Slight
ESR 9	31.54	31.67	79.18	0.13	0.33	Negligible
ESR 10	34.35	34.55	86.38	0.20	0.50	Negligible
ESR 11	28.86	29.45	73.63	0.59	1.48	Negligible
ESR 12	29.20	29.46	73.65	0.26	0.65	Negligible

Table 7: Changes in NO ₂ concentrations for 2031 future year with and without the Proposed Development						
NO ₂	2031 Without Development	2031 With Development	As % AQAL	Change	% Change	Impact
ESR 1	26.97	27.26	68.15	0.29	0.73	Negligible
ESR 2	28.37	29.46	73.65	1.09	2.73	Negligible
ESR 3	27.05	27.40	68.50	0.35	0.87	Negligible
ESR 4	29.39	30.55	76.38	1.16	2.90	Slight
ESR 5	27.99	28.38	70.95	0.39	0.98	Negligible
ESR 6	28.09	29.21	73.03	1.12	2.80	Negligible
ESR 7	29.38	30.29	75.73	0.91	2.28	Slight
ESR 8	30.19	32.08	80.20	1.89	4.72	Slight

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NO ₂	2031 Without Development	2031 With Development	As % AQAL	Change	% Change	Impact
ESR 9	31.65	31.85	79.63	0.20	0.50	Negligible
ESR 10	34.51	34.82	87.05	0.31	0.78	Negligible
ESR 11	28.91	29.85	74.63	0.94	2.35	Slight
ESR 12	29.27	29.68	74.20	0.41	1.03	Negligible

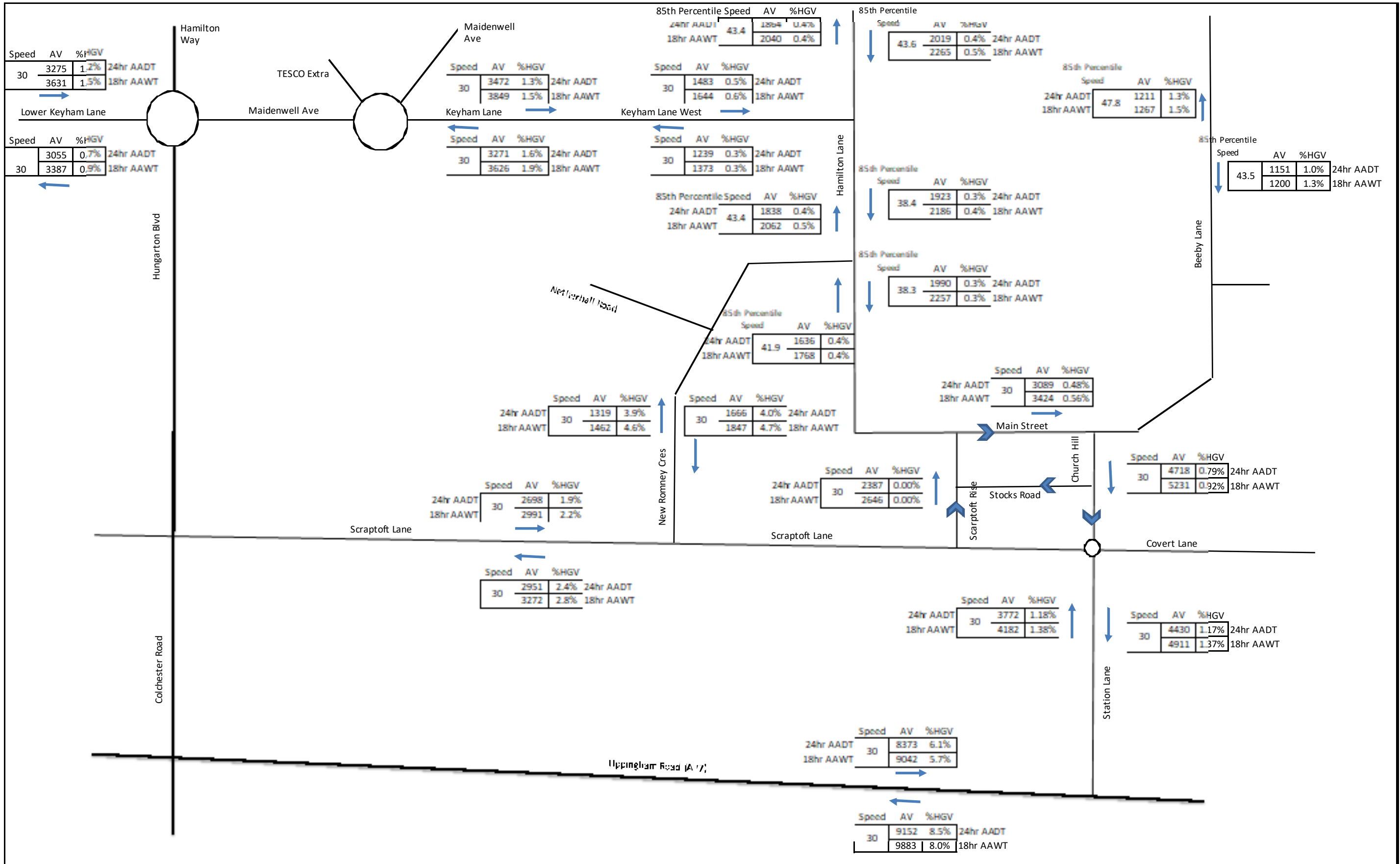
Enclosed

Appendix A

Traffic Data (as provided by RPS)

Drawing ST15451-008

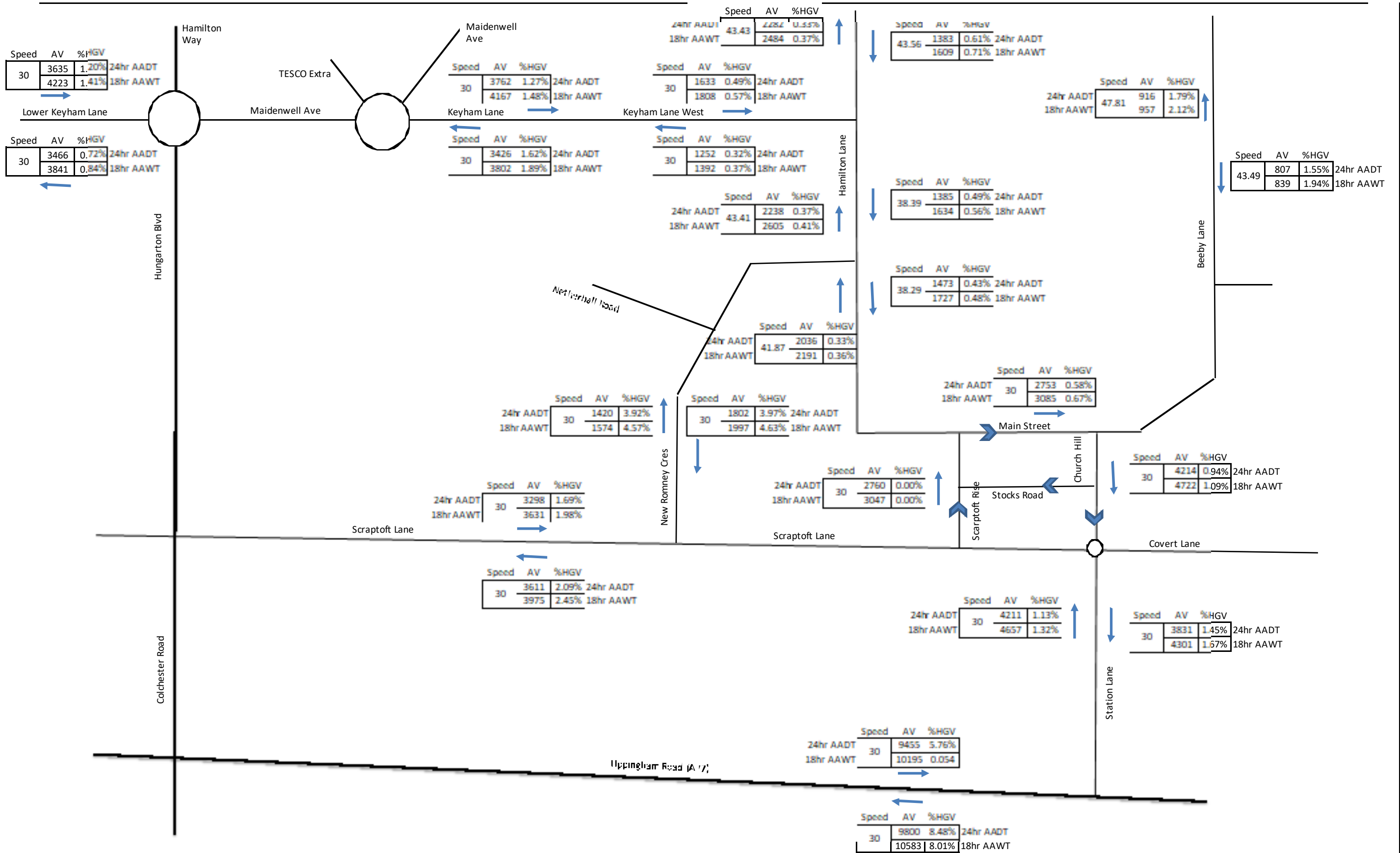
Air Quality Existing Sensitive Receptor



Project Name: Scraftoft
Project Number: JNY8843

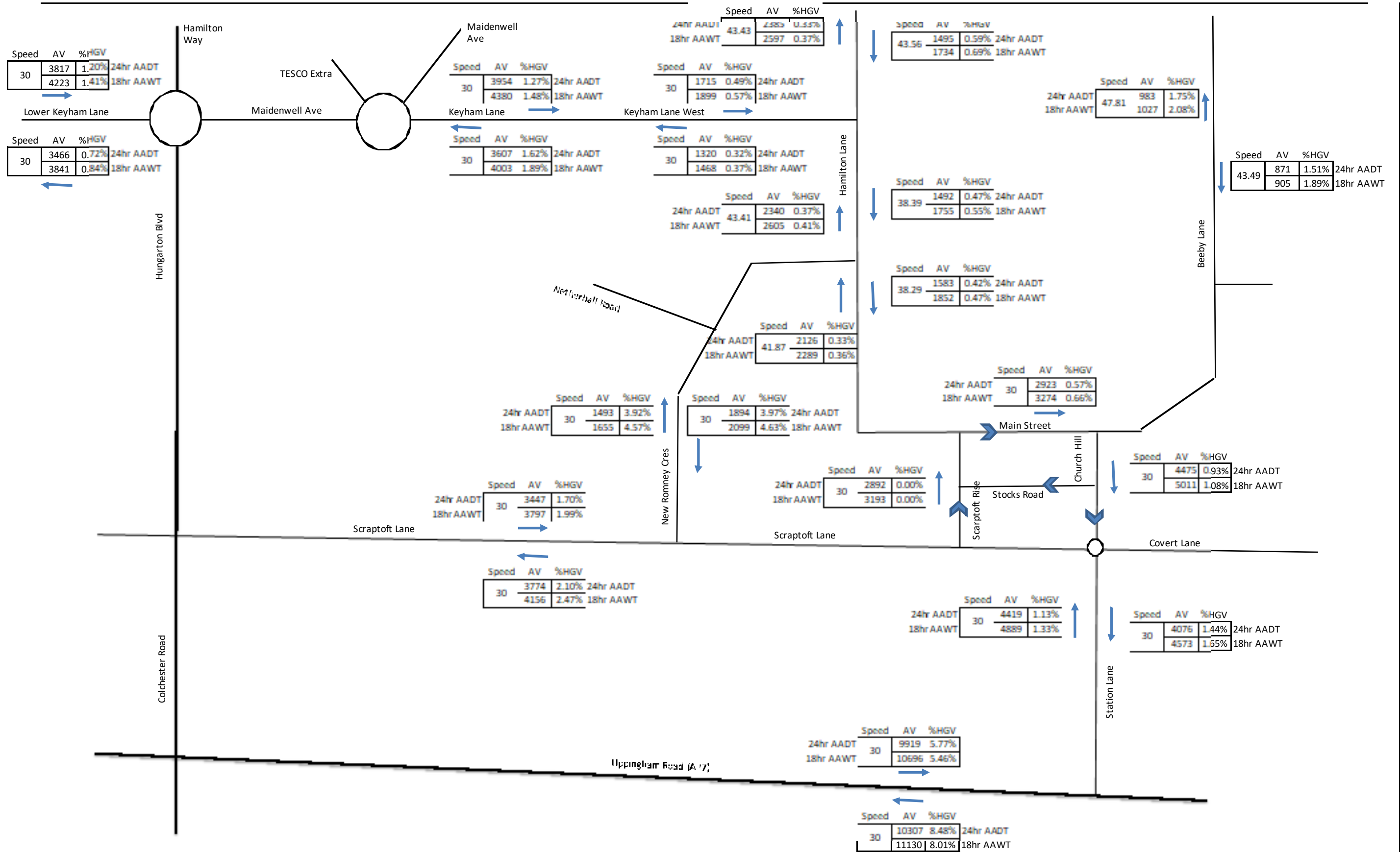
Base 2018 Traffic Flows

AADT/AAWT Flows



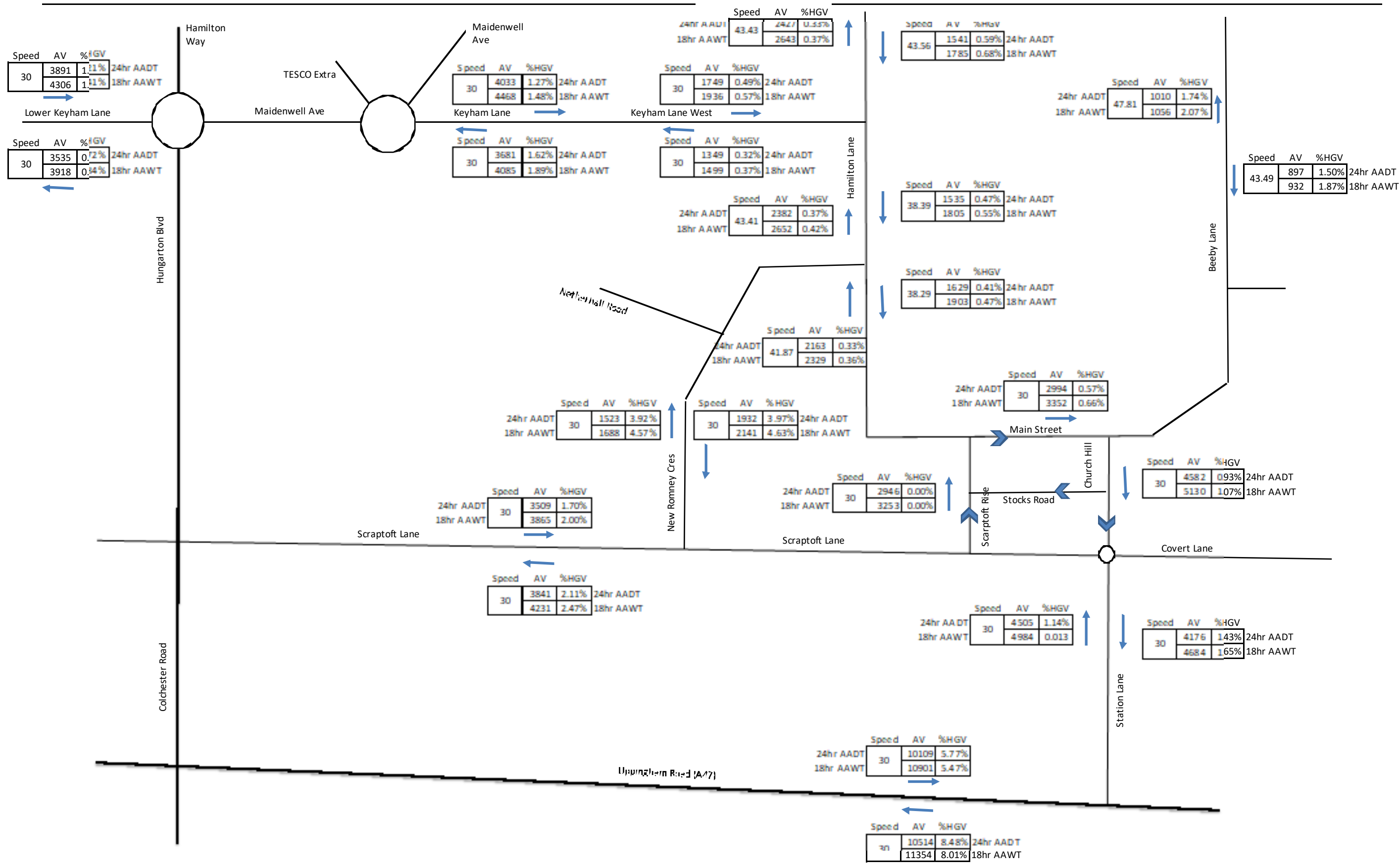
Project Name: Scraftoft
Project Number: JNY8843

Base 2023 Traffic Flows
Inc Committed Dev
AADT/AAWT Flows



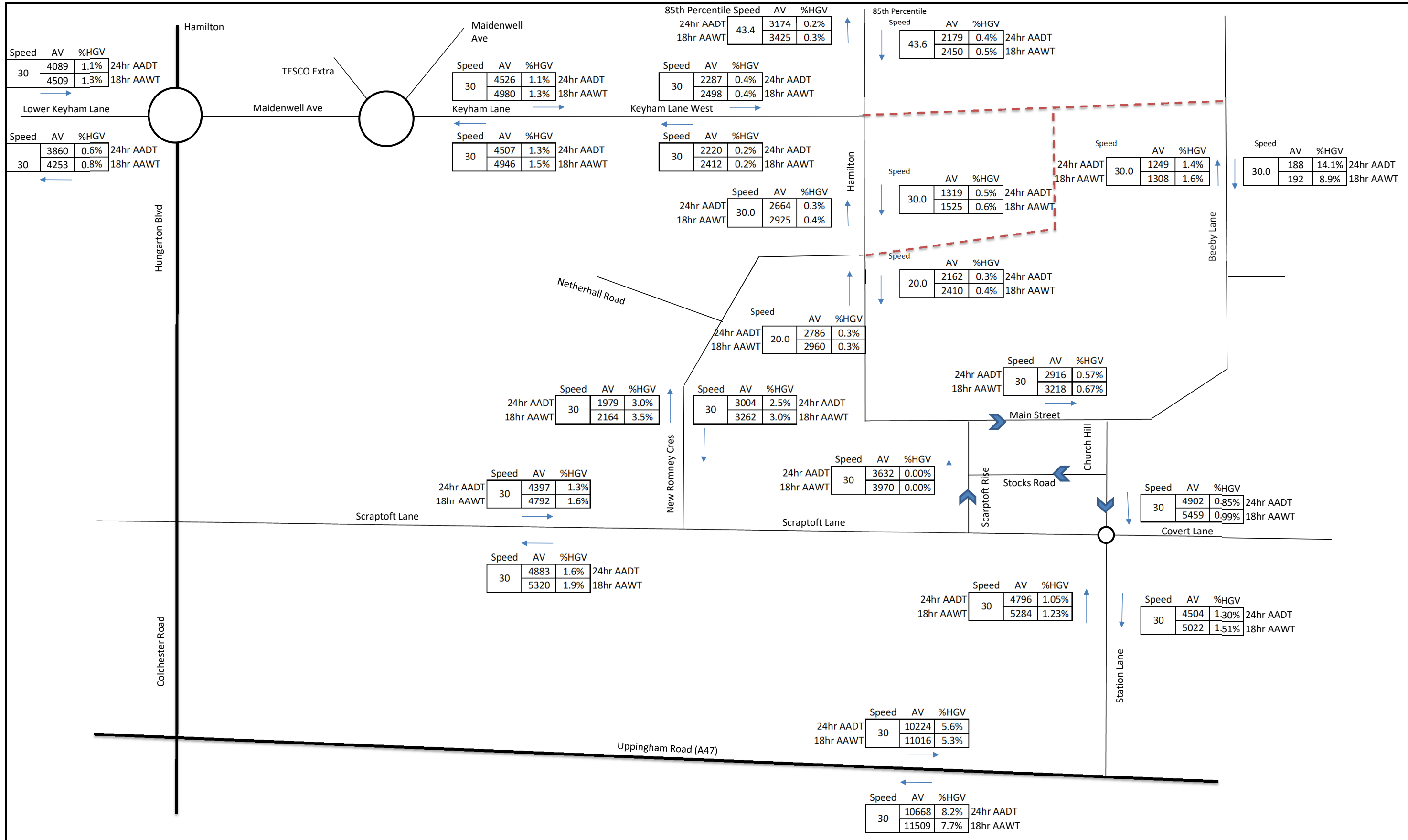
Project Name: Scraftoft
Project Number: JNY8843

Base 2028 Traffic Flows
Inc Committed Dev
AADT/AAWT Flows



Project Name: Scraftoft
Project Number: JNY8843

Base 2031 Traffic Flows
Inc Committed Dev
AADT/AAWT Flows

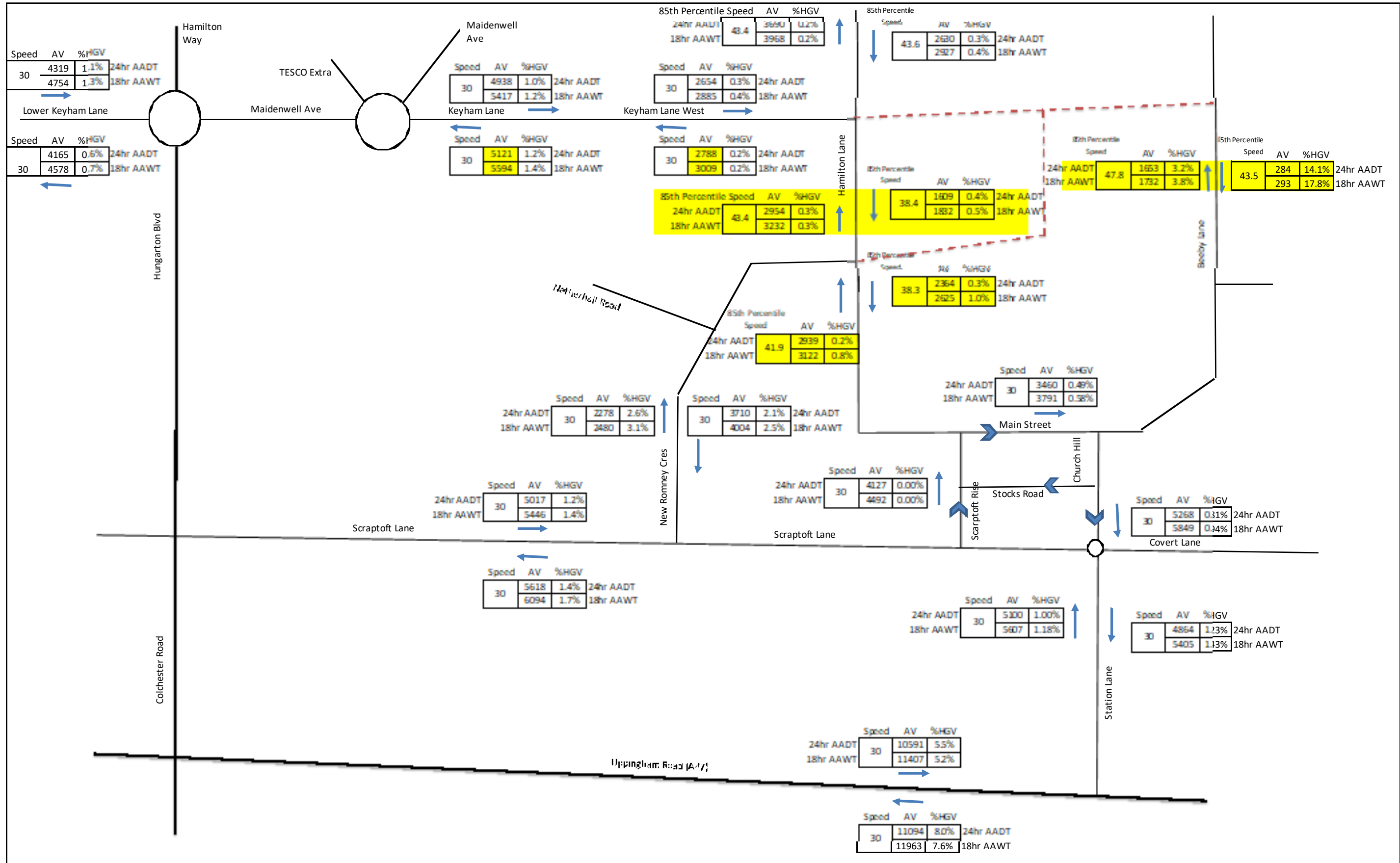


Includes New Primary School & 740 Dwellings

Project Name: Scraptoft
Project Number: JNY8843

2028 Traffic Flows Inc Proposed Dev

AAWT/AAWT Flows

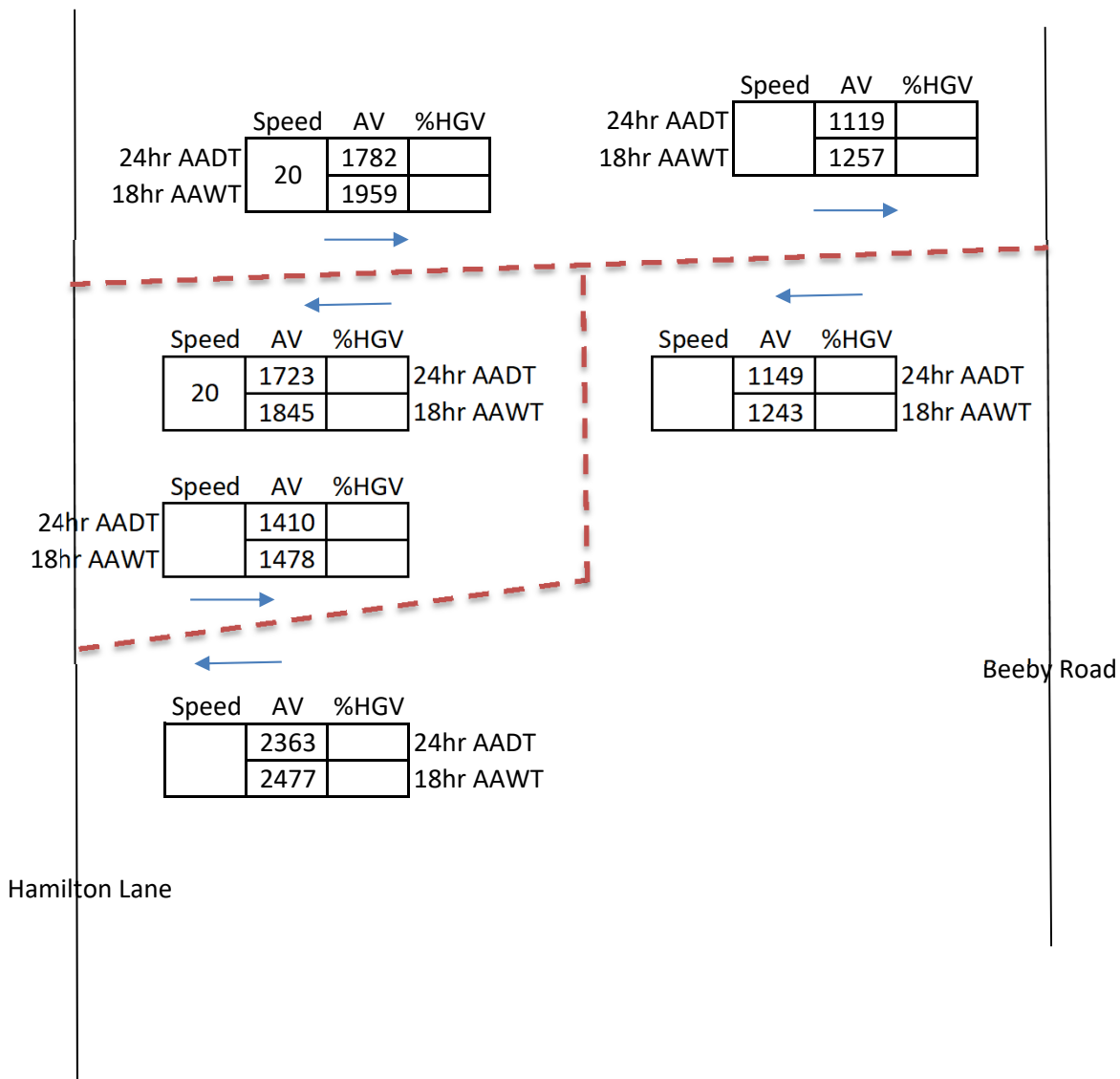


Includes New Primary School & 1200 Dwellings

Project Name: Scraftoft
Project Number: JNY8843

2031 Traffic Flows Inc Proposed Dev

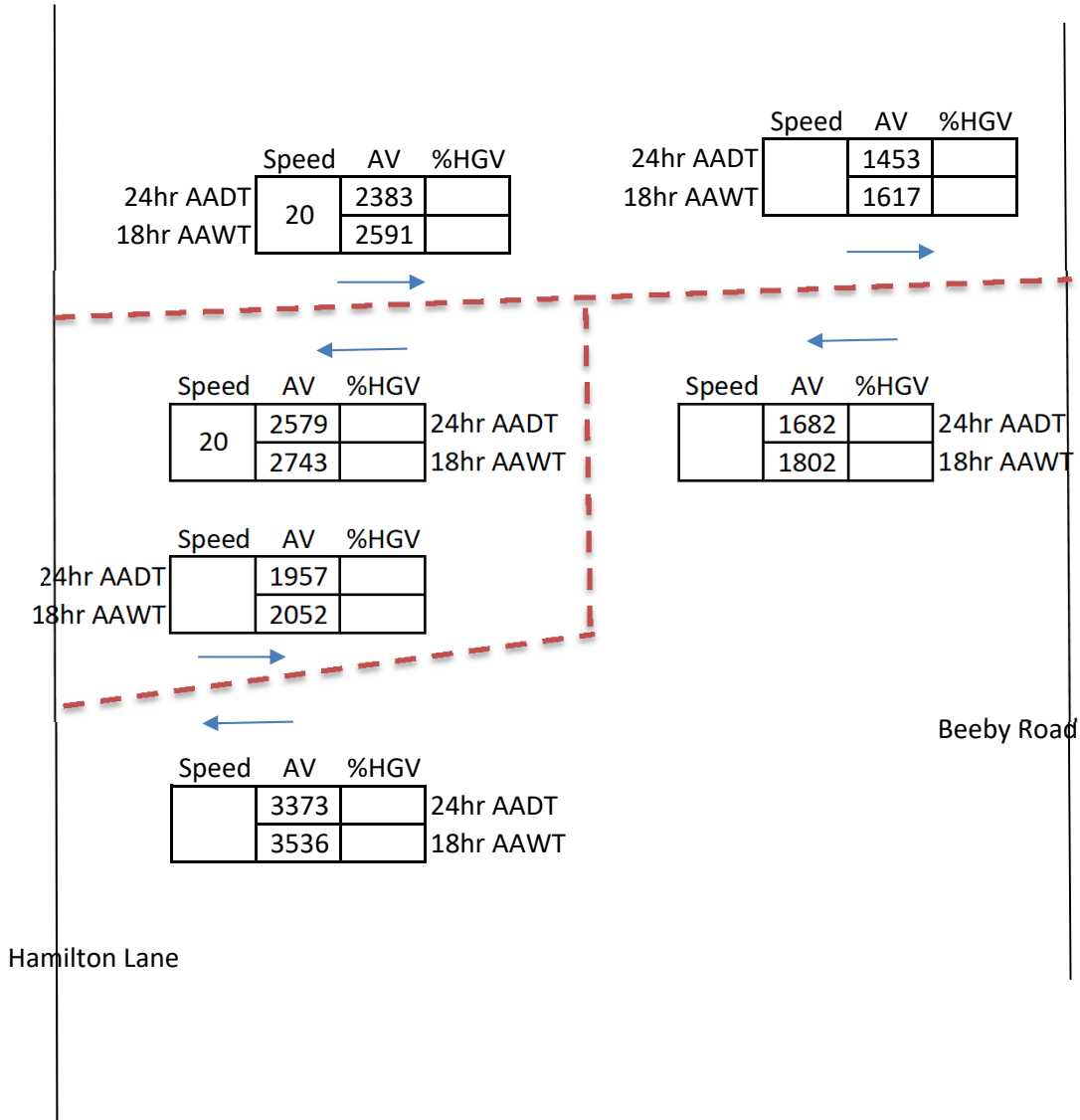
AADT/AAWT Flows



Hamilton Lane

Beeby Road

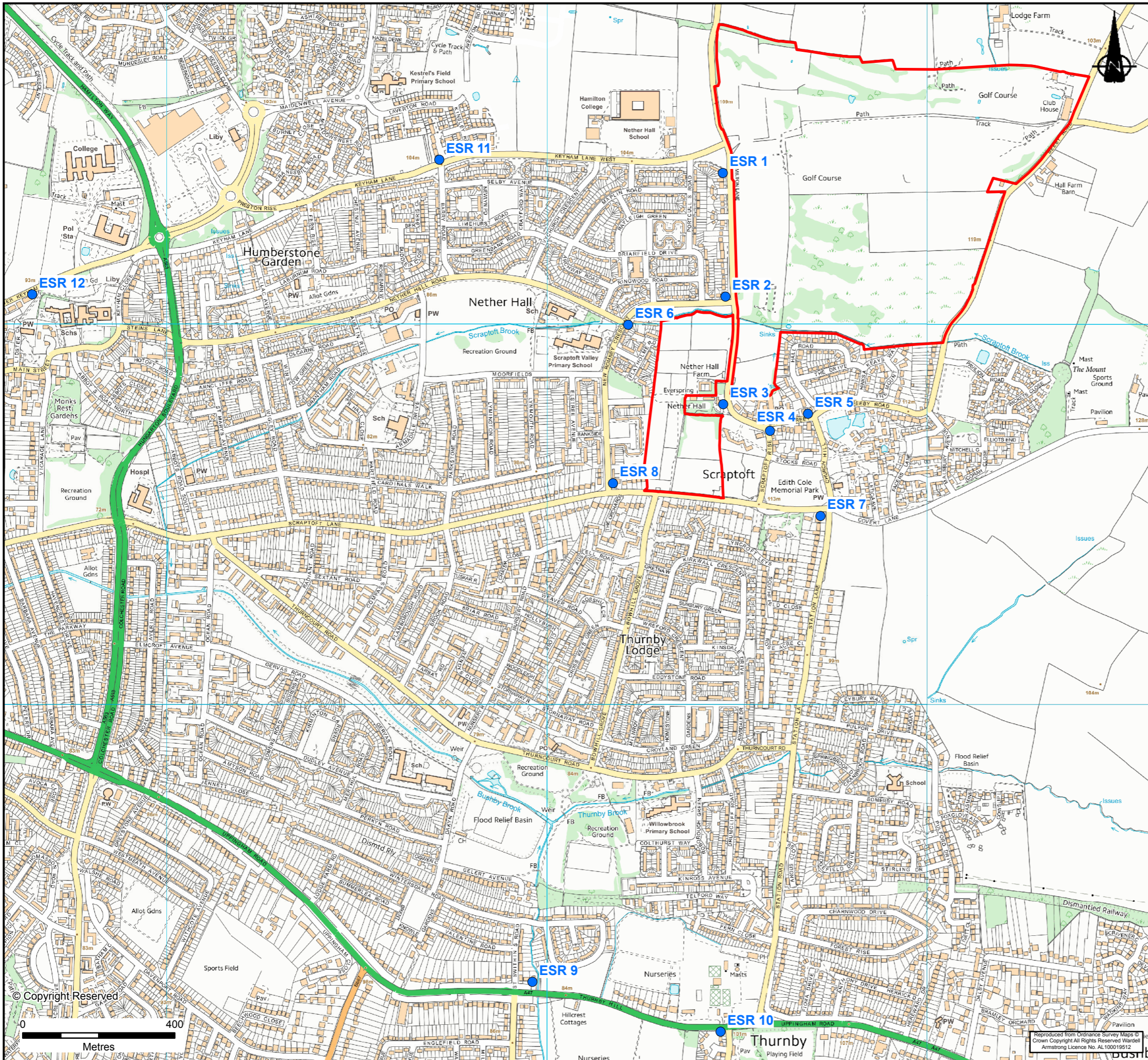




Hamilton Lane

Beeby Road





Key

- Site Boundary
- Existing Sensitive Receptors

Notes

Boundaries are indicative

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D
CLIENT	Parker Strategic Land Ltd				
PROJECT	Scraftoft North				
DRAWING TITLE	Air Quality Existing Sensitive Receptor				
DRG No	ST15451-008	REV	A		
DRG SIZE	A3	SCALE	1:10,000	DATE	September 2018
DRAWN BY	EF	CHECKED BY	MW	APPROVED BY	MTW

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