Northstowe
Phase 1 Planning Application

Environmental Statement
Technical Appendix E: Air Quality

February 2012

18e

Northstowe

Technical appendix E1: Glossary of Air Quality Terminology

Term	Definition
AADF/T Annual Average Daily Flow/Total	A daily total traffic flow (24 hrs), expressed as a mean daily flow across all 365 days of the year.
Air quality objective	Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedences within a specific timescale (see also air quality standard).
Air quality standard	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health, including the effects on sensitive sub groups (see also air quality objective).
Ambient air	Outdoor air in the troposphere, excluding workplace air.
Annual mean	The average (mean) of the concentrations measured for each pollutant for one year. Usually this is for a calendar year, but some species are reported for the period April to March, known as a pollution year. This period avoids splitting winter season between 2 years, which is useful for pollutants that have higher concentrations during the winter months.
AQMA	Air Quality Management Area.
Conservative	Tending to over-predict the impact rather than under-predict.
Data capture	The percentage of all the possible measurements for a given period that were validly measured.
DEFRA	Department for Environment, Food and Rural Affairs.
DfT	Department for Transport.
EIA	Environmental Impact Assessment.
Emission rate	The quantity of a pollutant released from a source over a given period of time.
Exceedence	A period of time where the concentrations of a pollutant is greater than, or equal to, the appropriate air quality standard.
Fugitive emissions	Emissions arising from the passage of vehicles that do not arise from the exhaust system.
HDV/HGV	Heavy Duty Vehicle/Heavy Goods Vehicle.
LAQM	Local Air Quality Management.
Model adjustment	Following model verification, the process by which modelled results are amended. This corrects for systematic error.

NO$_2$	Nitrogen dioxide.
PM$_{10}$	Particulate matter with an aerodynamic diameter of less than 10 micrometres.
Ratification (Monitoring)	Involves a critical review of all information relating to a data set, in order to amend or reject the data. When the data have been ratified they represent the final data to be used (see also validation).
µg/m^3 microgrammes per cubic metre	A measure of concentration in terms of mass per unit volume. A concentration of 1µg/m^3 means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.
UKAS	United Kingdom Accreditation Service.
Uncertainty	A measure, associated with the result of a measurement, that characterizes the range of values within which the true value is expected to lie. Uncertainty is usually expressed as the range within which the true value is expected to lie with a 95% probability, where standard statistical and other procedures have been used to evaluate this figure. Uncertainty is more clearly defined than the closely related parameter 'accuracy', and has replaced it on recent European legislation.
USA	Updating and Screening Assessment.
Validation (modelling)	Refers to the general comparison of modelled results against monitoring data carried out by model developers.
Validation (monitoring)	Screening monitoring data by visual examination to check for spurious and unusual measurements (see also ratification).
Verification (modelling)	Comparison of modelled results versus any local monitoring data at relevant locations.

Technical Appendix E2: Summary of Air Quality Standards and Objectives and relevant AQ guidance

A summary of the current air quality objectives for the seven pollutants detailed in the *Air Quality Regulations 2000 and (Amendment) Regulations 2002* for the purpose of Local Air Quality Management is provided below.

Air Quality Objectives currently included in the Air Quality Regulations 2000 and (Amendment) Regulations 2002 for the purpose of Local Air Quality Management (LAQM)						
Pollutant	**Applies to**	**Standard**		**Objective**		**EU AQ Daughter Directive**
		Concentration	*Measured as*	*Annual exceedences allowed*	*Target date*	
Benzene (C_6H_6)	All UK	16.25µg/m^3	running annual mean		31.12.2003	
	England and Wales	5µg/m^3	annual mean		31.12.2010	As standard. target: 01.01.2010
	Scotland	3.25µg/m^3	running annual mean		31.12.2010	
1,3-Butadiene (C_4H_6)	All UK	2.25µg/m^3	running annual mean		31.12.2003	
Carbon monoxide (CO)	All UK	10mg/m^3	maximum daily running 8 hour mean		31.12.2003	As standard. target: 01.01.2005
Lead (Pb)	All UK	0.5µg/m^3	annual mean		31.12.2004	As standard. target: 01.01.2005[8]
	All UK	0.25µg/m^3	annual mean		31.12.2008	
Nitrogen dioxide (NO_2)	All UK	200µg/m^3	1 hour mean	18	31.12.2005	As objective. target: 01.01.2010
	All UK	40µg/m^3	annual mean		31.12.2005	As standard. target: 01.01.2010
Particulate Matter (PM_{10}) (gravimetric)[1]	All UK	40µg/m^3	annual mean		31.12.2004	As standard. target: 01.01.2005
	All UK	50µg/m^3	24 hour mean	35	31.12.2004	As objective. target: 01.01.2005

	Scotland	50μg/m³	24 hour mean	7	31.12.2010	As objective. target: 01.01.2010
	Scotland	18μg/m³	annual mean		31.12.2010	
Sulphur dioxide (SO₂)	All UK	266μg/m³	15 minute mean	35	31.12.2005	
	All UK	350μg/m³	1 hour mean	24	31.12.2004	As objective. target: 01.01.2005
	All UK	125μg/m³	24 hour mean	3	31.12.2004	As objective. target: 01.01.2005

Provisional Air Quality Objectives currently NOT included in the Air Quality Regulations 2000 and (Amendment) Regulations 2002 for the purpose of Local Air Quality Management (LAQM)

Pollutant	Applies to	Standard		Objective		EU AQ Daughter Directive
		Concentration	*Measured as*	*Annual exceedences allowed*	Target date	
Polycyclic aromatic hydrocarbons (PAHs)[2]	All UK	$0.25ng/m^3$ B[a]P[3]	annual mean		31.12.2010	
Particulate Matter (PM$_{2.5}$) (gravimetric)[1,2]	UK (except Scotland)	$25\mu g/m^3$	annual mean	-	2020	As standard Target 2010
	Scotland	$12\mu g/m^3$	annual mean	-	2020	$25\mu g/m^3$ Target 2015
	UK urban areas	Target of 15% reduction in concentrations at urban background	annual mean	-	Between 2010 and 2020	Target 20% reduction in concentrations at urban background Target Between 2010 and 2020

Other Air Quality Strategy Objectives

Pollutant	Applies to	Standard		Objective		EU AQ Daughter Directive
		Concentration	*Measured as*	*Annual exceedences allowed*	Target date	
For the protection of human health						
Ozone (O$_3$)[4]	All UK	$100\mu g/m^3$	maximum daily running 8 hour mean	10	31.12.2005	As objective; but 25 annual exceedences target: 01.01.2010
For the protection of vegetation and ecosystems[5]						
Nitrogen oxides (NO$_X$)[6]		$30\mu g/m^3$	annual mean		31.12.2000[7]	As standard. target: 19.07.2001
Sulphur dioxide (SO$_2$)		$20\mu g/m^3$	annual mean		31.12.2000[7]	As standard. target: 19.07.2001
		$20\mu g/m^3$	winter mean (1 October to 31 March)		31.12.2000[7]	As standard. target: 19.07.2001

Explanation:

ng/m^3 = nanogram per cubic metre;

μg/m^3 = microgram per cubic metre;

mg/m^3 = milligrams per cubic metre (i.e. microgram per cubic meter x 1,000);

(1) Measured using the European gravimetric transfer sampler or equivalent.

(2) Objective to be set in regulations in the future.

(3) Concentration of Benzo[a]pyrene (B[a]P) to be measured as a marker for the total mixture of PAHs.

(4) The objective for this pollutant is provisional and must be tackled at a national level due to its trans-boundary nature.

(5) Only applies to those parts of the UK > 20km from an agglomeration; and > 5km from Part A processes, motorways and built up areas of > 5,000 people.

(6) Assuming NO_X is taken as NO_2.

(7) These objectives have successfully been achieved.

(8) Also an EU AQ Directive Limit Value of 1μg/m^3 to be achieved by 01.01.2010 in the immediate vicinity (1000 m) of certain named industrial sources situated on sites contaminated by decades of industrial activities.

The Air Quality Strategy states that further review and assessment and consultation in relation to air quality will be a rolling process, with additional revisions to the objectives for selected pollutants as appropriate, or where there is new evidence in relation to the effects of pollutants on health or ecosystems. New pollutants may be introduced through future reviews.

Appendix E.3 Summary of Traffic Data used in the Assessment

A summary of the traffic data used in the assessment is provided below. This traffic was provided by WSP Property and Development. It should be noted that limited traffic data was available for the verification year of 2009. However, traffic data was provided for all of the key roads closest to the verification sites.

2009 Model Verification			
Road Link	**AADT**	**% HGV**	**Modelled Speed (kph)**
Station Road	7923	7%	61
Rampton Road	4019	3%	65
Ramper Road	-	-	67
High Street	-	-	47
B1050	-	-	81
Bucking Way Road	-	-	65
School Lane	-	-	66
Woodside	3304	2%	97
Oakington Road	6161	3%	74
Hatton's Road	11977	6%	66
Water Lane	-	-	43
Dry Drayton Road	8934	2%	67
A14 N of J28 EB	34032	21%	71
A14 N of J28 WB	35047	20%	71
A14 S of J28 EB	37912	20%	65
A14 S of J28 WB	38115	16%	65
A14 S of J29 EB	47728	16%	87
A14 S of J29 WB	48266	19%	87
A14 S of J30 EB	47727	19%	88
A14 S of J30 WB	45938	19%	88

2011 Baseline			
Road Link	AADT	% HGV	Modelled Speed (kph)
Station Road	8345	9%	61
Rampton Road	3699	3%	65
Ramper Road	1327	4%	67
High Street	1027	16%	47
B1050	9111	8%	81
Bucking Way Road	4856	2%	65
School Lane	2629	3%	66
Woodside	2071	2%	97
Oakington Road	7662	9%	74
Hatton's Road	12779	6%	66
Water Lane	7662	9%	43
Dry Drayton Road	12725	7%	67
A14 N of J28 EB	36180	29%	71
A14 N of J28 WB	34268	29%	71
A14 S of J28 EB	40060	27%	65
A14 S of J28 WB	37336	27%	65
A14 S of J29 EB	49877	22%	87
A14 S of J29 WB	47487	22%	87
A14 S of J30 EB	49876	23%	88
A14 S of J30 WB	45159	23%	88

2015 Without Development			
Road Link	**AADT**	**% HGV**	**Modelled Speed (kph)**
Site Access (main)	0	0	48
Station Road	8578	8%	61
Rampton Road	4093	3%	64
Ramper Road	1486	4%	66
High Street	1292	13%	55
B1050	9463	6%	75
Bucking Way Road	4986	2%	61
School Lane	2786	5%	57
Woodside	2071	2%	82
Oakington Road	7633	9%	77
Hatton's Road	13611	6%	69
Water Lane	7633	9%	53
Dry Drayton Road	12816	6%	66
A14 N of J28 EB	37676	26%	69
A14 N of J28 WB	35332	26%	69
A14 S of J28 EB	41564	25%	67
A14 S of J28 WB	38633	25%	67
A14 S of J29 EB	52046	21%	80
A14 S of J29 WB	49386	21%	80
A14 S of J30 EB	52556	21%	80
A14 S of J30 WB	47059	21%	80

2015 With Development			
Road Link	**AADT**	**% HGV**	**Modelled Speed (kph)**
Site Access (main)	2408	1%	48
Station Road	8624	8%	61
Rampton Road	4279	3%	64
Ramper Road	1859	3%	66
High Street	1488	12%	55
B1050	10108	6%	75
Bucking Way Road	5480	2%	61
School Lane	2935	5%	57
Woodside	2071	2%	82
Oakington Road	7551	9%	77
Hatton's Road	14527	5%	69
Water Lane	7551	9%	53
Dry Drayton Road	12733	6%	66
A14 N of J28 EB	37719	26%	69
A14 N of J28 WB	35397	26%	69
A14 S of J28 EB	41504	25%	67
A14 S of J28 WB	38656	25%	67
A14 S of J29 EB	52493	21%	80
A14 S of J29 WB	49702	20%	80
A14 S of J30 EB	52875	21%	80
A14 S of J30 WB	47278	21%	80

2021 Without Development			
Road Link	**AADT**	**% HGV**	**Modelled Speed (kph)**
Site Access (main)	0	0%	48
Station Road	8926	9%	60
Rampton Road	4685	3%	62
Ramper Road	1725	4%	65
High Street	1689	10%	66
B1050	9990	6%	67
Bucking Way Road	5182	3%	57
School Lane	3443	3%	47
Woodside	2071	2%	64
Oakington Road	7588	10%	80
Hatton's Road	14858	5%	72
Water Lane	7588	10%	65
Dry Drayton Road	12952	7%	65
A14 N of J28 EB	39921	27%	66
A14 N of J28 WB	36928	27%	66
A14 S of J28 EB	43820	25%	70
A14 S of J28 WB	40579	25%	70
A14 S of J29 EB	55299	21%	73
A14 S of J29 WB	52235	21%	73
A14 S of J30 EB	56578	21%	70
A14 S of J30 WB	49909	21%	70

2021 With Development			
Road Link	**AADT**	**% HGV**	**Modelled Speed (kph)**
Site Access (main)	6020	1%	48
Station Road	9041	8%	60
Rampton Road	5149	3%	62
Ramper Road	2656	2%	64
High Street	2179	7%	65
B1050	11605	5%	66
Bucking Way Road	6417	2%	57
School Lane	3816	2%	47
Woodside	2071	2%	63
Oakington Road	7385	10%	78
Hatton's Road	17149	4%	70
Water Lane	7385	10%	63
Dry Drayton Road	12746	6%	64
A14 N of J28 EB	40027	27%	65
A14 N of J28 WB	37089	27%	65
A14 S of J28 EB	43670	25%	70
A14 S of J28 WB	40636	25%	70
A14 S of J29 EB	56418	21%	74
A14 S of J29 WB	53023	21%	74
A14 S of J30 EB	57374	21%	70
A14 S of J30 WB	50455	21%	70

Cambridgeshire Guided Busway (CGB)

Traffic flows for the CGB were not provided by WSP Property and Development. Consequently, the flows assumed for the CGB have been based on the current operational timetables (http://www.cambridgeshire.gov.uk/transport/around/usingbusway/default.htm) for the adjacent section of the CGB and the original Transport Assessment prepared for the CGB's Planning Application (available to download from: http://www.cambridgeshire.gov.uk/transport/around/usingbusway/default.htm)

Cambridgeshire Guided Busway (CGB)			
Route	**Operator**	**Typical Service Frequency (Weekday)**	**Assumed 2-way Movements per hour**
A (St Ives to Trumpington) and B (Huntington to Central Cambridge)	Stagecoach	Every 10 mins	12
C (Rail Station to St Ives)	Whippet	Every Hour	2
		Total:	**14**

Technical Appendix E4: Wind Rose for Mildenhall (2009)


Mildenhall_2009.met
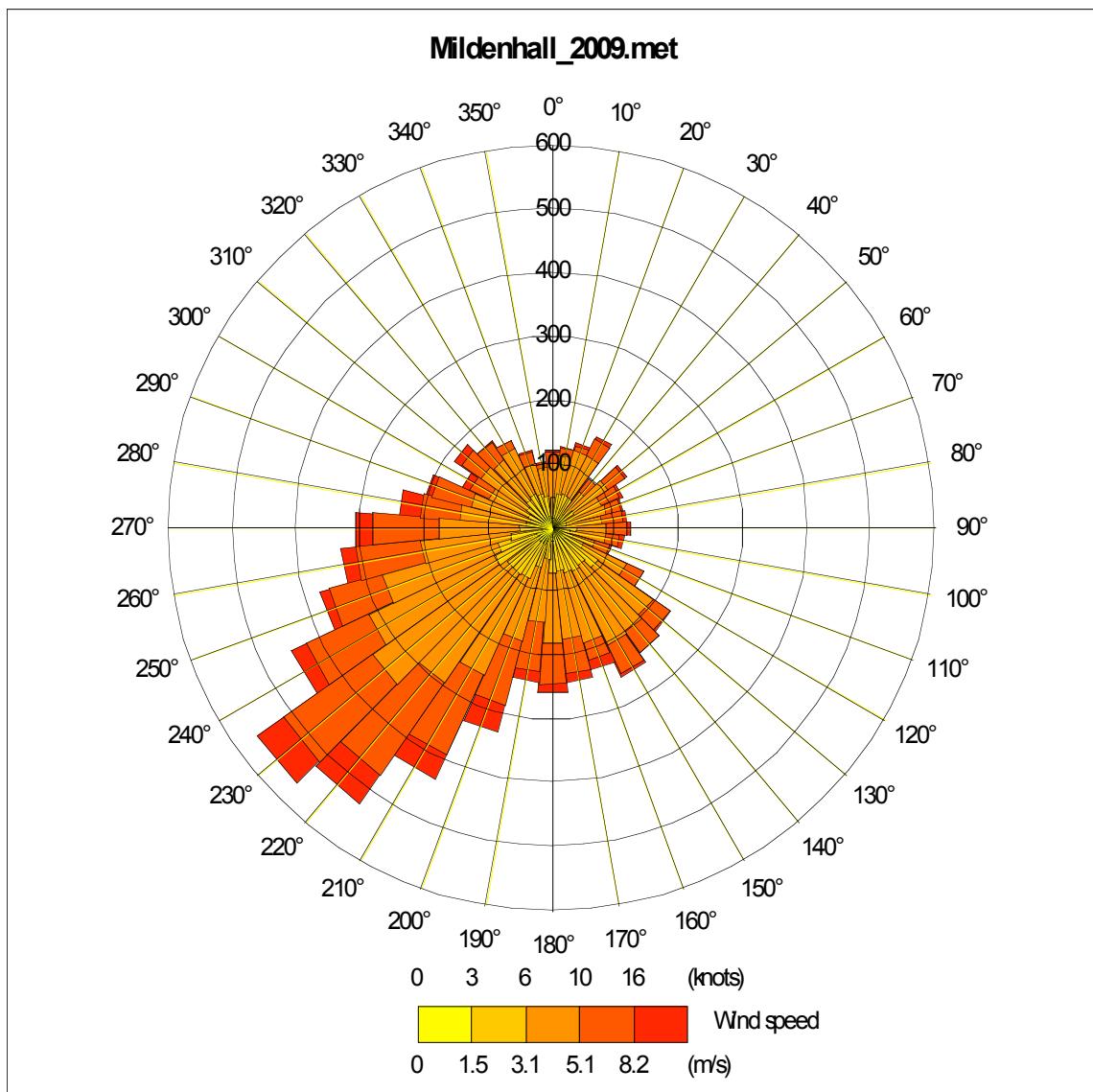
Technical Appendix E5: Model Verification Calculations

NO$_2$

Model verification has been undertaken following the methodology specified in Annex 3 of the Technical Guidance LAQM.TG(09). The NO$_x$:NO$_2$ calculator available from DEFRA's website was used to calculate the roadside NO$_x$ component of the annual mean NO$_2$ concentrations measured at the diffusion tube sites summarised in the table below. The roadside NOx value for the continuous monitor was calculated by subtracting the background NOx from the monitored annual mean NOx value, which was obtained from the EHO at SCDC.

A correction factor of 1.0795 was obtained during the verification process. This factor has been applied to the modelled Road-NO$_x$ contribution before inclusion of the appropriate background concentration and conversion to total annual mean NO$_2$ concentrations.

Monitoring Site	Type	2009 Monitored Annual Mean NO$_2$ Conc. (µg/m^3)	Background		Monitored Road-NO$_x$ (µg/m^3)	Modelled Road NO$_x$ (µg/m^3)	Ratio
			NO$_x$	NO$_2$			
Bar Hill	Roadside Continuous Monitor	39	15.8	11.7	86.2	72.9	1.2
Crafts Way	Roadside Diffusion Tube	24.6			27.5	10.1	2.7
Catchall Farm	Roadside Diffusion Tube	27.6			34.6	46.3	0.7
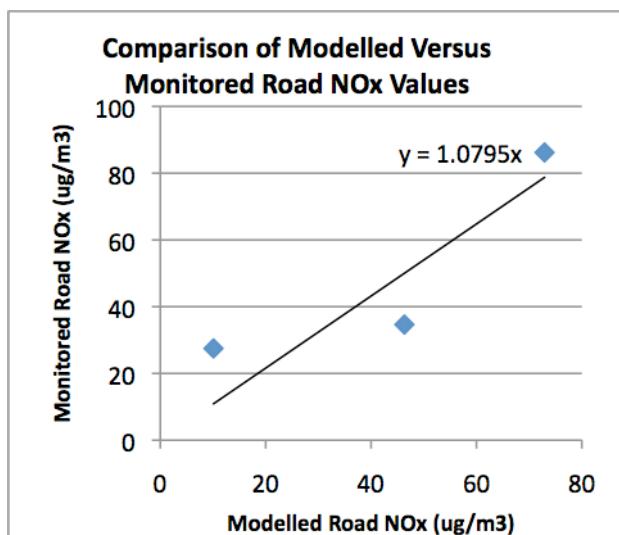
PM$_{10}$

A verification factor of 5.8 was obtained during the verification process and has been applied to the roadside PM$_{10}$ contribution before addition of the appropriate background concentration to determine total PM$_{10}$ concentrations at each receptor location.

Monitoring Site	Type	2009 Monitored Annual Mean PM$_{10}$ Conc. (µg/m^3)	Background PM$_{10}$ Concentration (µg/m^3)	Monitored Road-PM$_{10}$ (µg/m^3)	Modelled Road PM$_{10}$ (µg/m^3)	Ratio
Bar Hill	Roadside Continuous monitor	33	18.2	14.8	2.6	5.8

Appendix E6. Assessment Results

Predicted Annual Mean NO$_2$ Concentrations (µg/m^3)							
Existing Long-Term Sensitive Receptors							
Receptor No & Description	2011 Baseline	2015 Without Development	2015 With Development	Change	2021 Without Development	2021 With Development	Change
1. 95 Rampton Rd	12.97	12.58	12.59	0.01	12.19	12.24	0.05
2. 55 High St	13.01	12.61	12.63	0.02	12.21	12.26	0.05
3. Old School	12.77	12.44	12.45	0.01	12.11	12.15	0.04
4. 95 Rampton Rd	12.83	12.48	12.49	0.01	12.13	12.17	0.04
5. 32 Oakington Rd	14.16	13.32	13.31	-0.01	12.47	12.46	-0.01
6. 1 Westwick Cottage	16.48	14.66	14.65	-0.01	13.07	13.05	-0.02
7. 91 Water Lane	15.54	14.08	14.07	-0.01	12.79	12.78	-0.01
8. Oakington Primary	15.04	13.76	13.75	-0.01	12.64	12.63	-0.01
9. 6 Oakington Rd	16.29	14.55	14.53	-0.02	13.02	13.00	-0.02
10.19 Dry Drayton Rd	16.12	14.49	14.49	0.00	13.08	13.05	-0.03
11. 1 Poplar Villas	17.21	15.15	15.15	0.00	13.35	13.33	-0.02
12. 43 Longstanton R	13.21	12.62	12.62	0.00	12.12	12.12	0.00
13. 20 St Michaels	12.97	12.48	12.48	0.00	12.06	12.06	0.00
14. Old School	13.33	12.83	12.86	0.03	12.26	12.28	0.02
15. Drakes Court	13.01	12.51	12.57	0.06	12.08	12.11	0.03
16. 125 High Street	12.80	12.38	12.43	0.05	12.02	12.04	0.02
17. Southwell	14.10	13.20	13.18	-0.02	12.42	12.41	-0.01
18. Redlands Lodge	15.12	13.84	13.82	-0.02	12.73	12.71	-0.02
19. Hazelwell Cottag	18.09	15.78	15.88	0.10	13.77	13.89	0.12
20. Highfield Farm	12.93	12.51	12.57	0.06	12.13	12.22	0.09
21. 6 Ramper Rd	12.69	12.34	12.37	0.03	12.02	12.07	0.05
22. 26 Boxworth End	13.23	12.73	12.74	0.01	12.24	12.29	0.05
23. 1 Hill Farm Cottages	45.45	33.99	34.03	0.04	21.50	21.53	0.03
24. Rhadegund Cottages	38.59	29.03	29.00	-0.03	19.29	19.32	0.03
25. Hackers Fruit Farm	40.14	30.05	30.06	0.01	19.64	19.65	0.01

Predicted Annual Mean NO$_2$ Concentrations (µg/m^3)

Proposed Development Receptors

Description	Grid Reference		2015 With Development	2021 With Development
D1	539892	267836	13.33	12.48
D2	539707	267432	12.33	12.00
D3	539689	267292	12.13	11.90
D4	539848	266928	12.12	11.88
D5	540308	267026	12.05	11.85
D6	540548	267274	12.02	11.84
D7	540950	267315	12.01	11.83
D8	540713	267700	12.08	11.86

Predicted Annual Mean NO$_2$ Concentrations (µg/m^3)

Existing Short-Term Sensitive Receptors

Receptor No & Description	2011 Baseline	2015 Without Development	2015 With Development	Change	2021 Without Development	2021 With Development	Change
R1. Green	12.93	12.55	12.57	0.02	12.18	12.22	0.04
R2. Allotments Rampt	13.22	12.76	12.78	0.02	12.31	12.36	0.05
R3. Oakington Rd	16.56	14.93	14.92	-0.01	13.25	13.22	-0.03
R4. Westwick Farm	16.62	14.94	14.93	-0.01	13.24	13.21	-0.03
R5. Water Lane	17.41	15.24	15.23	-0.01	13.33	13.31	-0.02
R6. Oakington CofE	16.37	14.59	14.58	-0.01	13.03	13.01	-0.02
R7. Car Centre	16.28	14.60	14.59	-0.01	13.12	13.10	-0.02
R8. Garden Centre	18.93	16.33	16.32	-0.01	14.01	13.97	-0.04
R9. White Horse	13.61	12.86	12.86	0.00	12.25	12.25	0.00
R10. The Old School	12.81	12.42	12.44	0.02	12.04	12.05	0.01
R11. Green	13.08	12.56	12.63	0.07	12.11	12.14	0.03
R12. B1050	16.70	14.74	14.84	0.10	13.21	13.34	0.13
R13. 96 Boxworth End	14.15	13.38	13.41	0.03	12.60	12.69	0.09
R14. Trinity Foot PH	44.43	33.43	33.46	0.03	21.48	21.51	0.03
R15.Little Chef	51.56	38.58	38.63	0.05	23.70	23.73	0.03
R16. David Ball	57.92	43.60	43.57	-0.03	26.38	26.46	0.08
R17. Golf Course	28.59	22.20	22.19	-0.01	16.20	16.22	0.02

		Predicted Annual Mean NO$_2$ Concentrations (µg/m^3)					
		Additional A14 Receptors (AQMA)					
Description	Grid Reference	2015 Without Development	2015 With Development	Change	2021 Without Development	2021 With Development	Change
15 10m N	539034 263501	38.44	38.41	-0.03	23.79	23.86	0.07
15 20m N	539040 263509	32.48	32.45	-0.03	20.90	21.06	0.16
15 40m N	539053 263524	26.16	26.15	-0.01	17.98	18.01	0.03
15 60m N	539066 263540	22.92	22.90	-0.02	16.52	16.55	0.03
15 80m N	539078 263556	20.89	20.88	-0.01	15.63	15.65	0.02
15 100m N	539091 263571	19.49	19.48	-0.01	15.01	15.03	0.02
15 120m N	539103 263587	18.47	18.46	-0.01	14.57	14.59	0.02
15 140m N	539116 263602	17.67	17.66	-0.01	14.23	14.24	0.01
15 160m N	539129 263617	17.07	17.07	0.00	13.97	13.98	0.01
15 180m N	539142 263633	16.56	16.56	0.00	13.75	13.76	0.01
15 200m N	539155 263648	16.15	16.14	-0.01	13.57	13.59	0.02
15 220m N	539168 263664	15.79	15.79	0.00	13.42	13.43	0.01
15 240m N	539180 263679	15.49	15.49	0.00	13.30	13.31	0.01
15 260m N	539193 263694	15.24	15.23	-0.01	13.19	13.20	0.01
15 280m N	539206 263710	15.01	15.01	0.00	13.09	13.10	0.01
15 300m N	539218 263725	14.82	14.82	0.00	13.01	13.02	0.01
15 10m S	539003 263461	31.51	31.48	-0.03	20.44	20.48	0.04
15 20m S	538996 263453	26.19	26.17	-0.02	17.99	18.02	0.03
15 40m S	538984 263437	21.33	21.32	-0.01	15.82	15.84	0.02
15 60m S	538971 263421	18.96	18.95	-0.01	14.78	14.80	0.02
15 80m S	538959 263406	17.57	17.56	-0.01	14.18	14.20	0.02
15 100m S	538946 263391	16.63	16.62	-0.01	13.78	13.79	0.01
15 120m S	538934 263375	15.94	15.93	-0.01	13.48	13.50	0.02
15 140m S	538921 263359	15.41	15.40	-0.01	13.26	13.27	0.01
15 160m S	538909 263344	15.01	15.01	0.00	13.09	13.10	0.01
15 180m S	538896 263329	14.69	14.69	0.00	12.95	12.96	0.01
15 200m S	538884 263313	14.42	14.42	0.00	12.84	12.85	0.01
15 220m S	538872 263298	14.19	14.19	0.00	12.75	12.75	0.00
15 240m S	538859 263282	14.00	14.00	0.00	12.66	12.67	0.01
15 260m S	538847 263267	13.83	13.83	0.00	12.59	12.6	0.01
15 280m S	538834 263251	13.69	13.69	0.00	12.53	12.54	0.01
15 300m S	538822 263235	13.56	13.56	0.00	12.48	12.48	0.00

Predicted Annual Mean PM$_{10}$ Concentrations (µg/m^3)							
Existing Long-Term Sensitive Receptors							
Receptor No & Description	2011 Baseline	2015 Without Development	2015 With Development	Change	2021 Without Development	2021 With Development	Change
1. 95 Rampton Rd	19.38	19.29	19.33	0.04	19.26	19.36	0.10
2. 55 High St	19.42	19.33	19.37	0.04	19.29	19.40	0.11
3. Old School	19.16	19.09	19.12	0.03	19.06	19.14	0.08
4. 95 Rampton Rd	19.23	19.15	19.18	0.03	19.12	19.20	0.08
5. 32 Oakington Rd	20.05	19.77	19.76	-0.01	19.55	19.52	-0.02
6. 1 Westwick Cottage	21.74	21.11	21.09	-0.02	20.68	20.64	-0.04
7. 91 Water Lane	20.94	20.45	20.43	-0.02	20.12	20.08	-0.04
8. Oakington Primary	20.52	20.10	20.08	-0.02	19.81	19.79	-0.02
9. 6 Oakington Rd	21.56	20.96	20.94	-0.02	20.55	20.51	-0.04
10. 19 Dry Drayton Rd	21.75	21.16	21.15	-0.01	20.78	20.74	-0.04
11. 1 Poplar Villas	22.13	21.41	21.40	-0.01	20.95	20.91	-0.04
12. 43 Longstanton R	19.21	18.99	19.00	0.01	18.86	18.86	0.00
13. 20 St Michaels	19.09	18.90	18.90	0.00	18.78	18.79	0.01
14. Old School	19.43	19.29	19.34	0.05	19.26	19.35	0.09
15. Drakes Court	18.89	18.80	18.85	0.05	18.77	18.86	0.09
16. 125 High Street	18.77	18.69	18.73	0.04	18.66	18.73	0.07
17. Southwell	19.92	19.65	19.66	0.01	19.50	19.51	0.01
18. Redlands Lodge	20.69	20.31	20.31	0.00	20.08	20.08	0.00
19. Hazelwell Cottag	22.67	21.99	22.17	0.18	21.64	22.02	0.38
20. Highfield Farm	19.05	18.96	19.08	0.12	18.93	19.19	0.26
21. 6 Ramper Rd	18.86	18.77	18.83	0.06	18.73	18.87	0.14
22. 26 Boxworth End	19.53	19.35	19.43	0.08	19.24	19.42	0.18
23. 1 Hill Farm Cottages	31.17	26.85	26.86	0.01	24.20	24.22	0.02
24. Rhadegund Cottages	28.67	25.02	25.03	0.01	22.90	22.94	0.04
25. Hackers Fruit Farm	29.32	25.41	25.43	0.02	23.17	23.20	0.03

Predicted Annual Mean PM$_{10}$ Concentrations (μg/m^3)				
Proposed Development Receptors				
Description	**Grid Reference**		**2015 With Development**	**2021 With Development**
D1	539892	267836	19.83	19.66
D2	539707	267432	18.66	18.66
D3	539689	267292	18.47	18.44
D4	539848	266928	18.44	18.41
D5	540308	267026	18.39	18.36
D6	540548	267274	18.37	18.35
D7	540950	267315	18.36	18.33
D8	540713	267700	18.40	18.37

Predicted Annual Mean PM$_{10}$ Concentrations (μg/m^3)							
Short-Term Sensitive Receptors							
Receptor No & Description	**2011 Baseline**	**2015 Without Development**	**2015 With Development**	**Change**	**2021 Without Development**	**2021 With Development**	**Change**
R1. Green	19.33	19.24	19.28	-0.05	19.21	19.32	0.10
R2. Allotments Rampt	19.67	19.59	19.62	-0.06	19.53	19.66	0.13
R3. Oakington Rd	22.02	21.45	21.42	-0.60	20.99	20.94	-0.05
R4. Westwick Farm	21.93	21.33	21.32	-0.61	20.89	20.84	-0.05
R5. Water Lane	22.45	21.68	21.67	-0.78	21.17	21.12	-0.05
R6. Oakington CofE	21.59	20.98	20.96	-0.63	20.57	20.53	-0.04
R7. Car Centre	21.91	21.27	21.28	-0.63	20.89	20.85	-0.04
R8. Garden Centre	24.30	23.30	23.30	-1.00	22.68	22.61	-0.07
R9. White Horse	19.64	19.36	19.34	-0.30	19.16	19.16	0.00
R10. The Old School	18.88	18.78	18.80	-0.08	18.73	18.78	0.05
R11. Green	18.94	18.84	18.91	-0.03	18.82	18.93	0.10
R12. B1050	22.14	21.51	21.69	-0.46	21.18	21.56	0.38
R13. 96 Boxworth End	20.52	20.23	20.37	-0.15	20.04	20.37	0.33
R14. Trinity Foot PH	37.70	33.98	34.00	-3.71	31.99	32.06	0.07
R15.Little Chef	34.28	28.93	28.94	-5.33	25.66	25.68	0.02
R16. David Ball	39.91	31.71	31.74	-8.18	27.51	27.58	0.07
R17. Golf Course	26.36	22.20	22.22	-4.14	20.97	20.99	0.02

Description	Grid Reference		2015 Without Development	2015 With Development	Change	2021 Without Development	2021 With Development	Change
			Predicted Annual Mean PM$_{10}$ Concentrations (µg/m^3)					
			Additional A14 Receptors (AQMA)					
15 10m N	539034	263501	29.22	29.23	0.01	25.79	25.84	0.06
15 20m N	539040	263509	26.49	26.51	0.02	23.92	24.03	0.11
15 40m N	539053	263524	23.81	23.82	0.01	22.07	22.10	0.03
15 60m N	539066	263540	22.49	22.50	0.01	21.17	21.19	0.02
15 80m N	539078	263556	21.69	21.70	0.01	20.62	20.64	0.02
15 100m N	539091	263571	21.15	21.16	0.01	20.24	20.26	0.02
15 120m N	539103	263587	20.76	20.77	0.01	19.97	19.99	0.02
15 140m N	539116	263602	20.45	20.46	0.01	19.76	19.78	0.01
15 160m N	539129	263617	20.22	20.23	0.01	19.61	19.62	0.01
15 180m N	539142	263633	20.04	20.04	0.00	19.48	19.49	0.01
15 200m N	539155	263648	19.88	19.89	0.00	19.37	19.38	0.01
15 220m N	539168	263664	19.75	19.75	0.00	19.28	19.29	0.01
15 240m N	539180	263679	19.64	19.64	0.00	19.20	19.21	0.01
15 260m N	539193	263694	19.54	19.55	0.01	19.14	19.15	0.01
15 280m N	539206	263710	19.46	19.46	0.00	19.08	19.09	0.01
15 300m N	539218	263725	19.39	19.39	0.00	19.03	19.04	0.01
15 10m S	539003	263461	26.09	26.10	0.01	23.64	23.67	0.03
15 20m S	538996	263453	23.83	23.84	0.01	22.08	22.11	0.03
15 40m S	538984	263437	21.87	21.88	0.01	20.74	20.76	0.02
15 60m S	538971	263421	20.95	20.95	0.00	20.10	20.12	0.02
15 80m S	538959	263406	20.42	20.42	0.00	19.74	19.75	0.01
15 100m S	538946	263391	20.06	20.06	0.00	19.49	19.50	0.01
15 120m S	538934	263375	19.80	19.80	0.00	19.31	19.32	0.01
15 140m S	538921	263359	19.60	19.60	0.00	19.17	19.18	0.01
15 160m S	538909	263344	19.45	19.46	0.00	19.07	19.08	0.01
15 180m S	538896	263329	19.33	19.33	0.00	18.99	19.00	0.01
15 200m S	538884	263313	19.23	19.23	0.00	18.92	18.93	0.01
15 220m S	538872	263298	19.15	19.15	0.00	18.86	18.87	0.01
15 240m S	538859	263282	19.08	19.08	0.00	18.81	18.82	0.01
15 260m S	538847	263267	19.01	19.02	0.01	18.77	18.78	0.01
15 280m S	538834	263251	18.96	18.96	0.00	18.73	18.74	0.01
15 300m S	538822	263235	18.91	18.92	0.01	18.70	18.71	0.01

Predicted 24-hourly Mean PM_{10} Results – Number of Days $>50\mu g/m^3$							
Existing Long-Term Sensitive Receptors							
Receptor No & Description	2011 Baseline	2015 Without Development	2015 With Development	Change	2021 Without Development	2021 With Development	Change
1. 95 Rampton Rd	3	3	3	0	3	3	0
2. 55 High St	3	3	3	0	3	3	0
3. Old School	2	2	2	0	2	2	0
4. 95 Rampton Rd	3	2	2	0	2	2	0
5. 32 Oakington Rd	3	3	3	0	3	3	0
6. 1 Westwick Cottage	6	5	5	0	4	4	0
7. 91 Water Lane	5	4	4	0	4	3	0
8. Oakington Primary	4	4	4	0	3	3	0
9. 6 Oakington Rd	6	5	5	0	4	4	0
10.19 Dry Drayton Rd	6	5	5	0	4	4	0
11. 1 Poplar Villas	7	5	5	0	5	5	0
12. 43 Longstanton R	3	2	2	0	2	2	0
13. 20 St Michaels	2	2	2	0	2	2	0
14. Old School	3	3	3	0	3	3	0
15. Drakes Court	2	2	2	0	2	2	0
16. 125 High Street	2	2	2	0	2	2	0
17. Southwell	3	3	3	0	3	3	0
18. Redlands Lodge	4	4	4	0	4	4	0
19. Hazelwell Cottage	7	6	7	0	6	6	0
20. Highfield Farm	2	2	2	0	2	2	0
21. 6 Ramper Rd	2	2	2	0	2	2	0
22. 26 Boxworth End	3	3	3	0	3	3	0
23. 1 Hill Farm Cottages	32	17	17	0	11	11	0
24. Rhadegund Cottages	23	12	12	0	8	8	0
25. Hackers Fruit Farm	25	13	13	0	8	8	0

Predicted 24-hourly Mean PM$_{10}$ Results – Number of Days >50µg/m^3

Proposed Development Receptors

Description	Grid Reference		2015 With Development	2021 With Development
D1	539892	267836	3	3
D2	539707	267432	2	2
D3	539689	267292	2	2
D4	539848	266928	2	2
D5	540308	267026	2	2
D6	540548	267274	2	2
D7	540950	267315	2	2
D8	540713	267700	2	2

Predicted 24-hourly Mean PM$_{10}$ Results – Number of Days >50µg/m^3

Short-Term Sensitive Receptors

Receptor No & Description	2011 Baseline	2015 Without Development	2015 With Development	Change	2021 Without Development	2021 With Development	Change
R1. Green	3	3	3	0	3	3	0
R2. Allotments Rampt	3	3	3	0	3	3	0
R3. Oakington Rd	6	5	5	0	5	5	0
R4. Westwick Farm	6	5	5	0	5	5	0
R5. Water Lane	7	6	6	0	5	5	0
R6. Oakington CofE	6	5	5	0	4	4	0
R7. Car Centre	6	5	5	0	5	5	0
R8. Garden Centre	11	9	9	0	7	7	0
R9. White Horse	3	3	3	0	2	2	0
R10. The Old School	2	2	2	0	2	2	0
R11. Green	2	2	2	0	2	2	0
R12. B1050	7	5	6	0	5	6	0
R13. 96 Boxworth End	4	4	4	0	3	4	0
R14. Trinity Foot PH	65	44	45	0	35	36	0
R15.Little Chef	46	24	24	0	14	14	0
R16. David Ball	79	34	34	0	19	19	0
R17. Golf Course	16	7	7	0	5	5	0

Predicted Annual Mean PM$_{10}$ Concentrations (µg/m^3)								
Additional A14 Receptors (AQMA)								
Description	Grid Reference		2015 Without Development	2015 With Development	Change	2021 Without Development	2021 With Development	Change
15 10m N	539034	263501	25	25	0	14	14	0
15 20m N	539040	263509	16	16	0	10	10	0
15 40m N	539053	263524	10	10	0	6	6	0
15 60m N	539066	263540	7	7	0	5	5	0
15 80m N	539078	263556	6	6	0	4	4	0
15 100m N	539091	263571	5	5	0	4	4	0
15 120m N	539103	263587	4	4	0	3	3	0
15 140m N	539116	263602	4	4	0	3	3	0
15 160m N	539129	263617	4	4	0	3	3	0
15 180m N	539142	263633	3	3	0	3	3	0
15 200m N	539155	263648	3	3	0	3	3	0
15 220m N	539168	263664	3	3	0	3	3	0
15 240m N	539180	263679	3	3	0	2	3	0
15 260m N	539193	263694	3	3	0	2	2	0
15 280m N	539206	263710	3	3	0	2	2	0
15 300m N	539218	263725	3	3	0	2	2	0
15 10m S	539003	263461	15	15	0	9	9	0
15 20m S	538996	263453	10	10	0	6	6	0
15 40m S	538984	263437	6	6	0	4	4	0
15 60m S	538971	263421	5	5	0	4	4	0
15 80m S	538959	263406	4	4	0	3	3	0
15 100m S	538946	263391	3	3	0	3	3	0
15 120m S	538934	263375	3	3	0	3	3	0
15 140m S	538921	263359	3	3	0	2	2	0
15 160m S	538909	263344	3	3	0	2	2	0
15 180m S	538896	263329	3	3	0	2	2	0
15 200m S	538884	263313	3	3	0	2	2	0
15 220m S	538872	263298	2	2	0	2	2	0
15 240m S	538859	263282	2	2	0	2	2	0
15 260m S	538847	263267	2	2	0	2	2	0
15 280m S	538834	263251	2	2	0	2	2	0

15 300m S	538822	263235	2	2	0	2	2	0

Results of Sensitivity Test

Sensitivity Test - Predicted Annual Mean NO_2 Concentrations ($\mu g/m^3$)		
Existing Long-Term Sensitive Receptors		
Receptor No & Description	**2021 Without Development**	**2021 With Development**	**Change**
1. 95 Rampton Rd	13.42	13.59	0.17
2. 55 High St	13.49	13.67	0.18
3. Old School	13.15	13.29	0.14
4. 95 Rampton Rd	13.23	13.37	0.14
5. 32 Oakington Rd	14.82	14.77	-0.05
6. 1 Westwick Cottage	17.24	17.19	-0.05
7. 91 Water Lane	16.19	16.14	-0.05
8. Oakington Primary	15.61	15.57	-0.04
9. 6 Oakington Rd	17.04	16.98	-0.06
10. 19 Dry Drayton Rd	17.00	16.91	-0.09
11. 1 Poplar Villas	18.29	18.19	-0.10
12. 43 Longstanton R	13.41	13.41	0.00
13. 20 St Michaels	13.14	13.14	0.00
14. Old School	13.84	13.84	0.00
15. Drakes Court	13.36	13.4	0.04
16. 125 High Street	13.10	13.13	0.03
17. Southwell	14.65	14.56	-0.09
18. Redlands Lodge	15.89	15.73	-0.16
19. Hazelwell Cottag	19.75	19.98	0.23
20. Highfield Farm	13.45	13.62	0.17
21. 6 Ramper Rd	13.04	13.13	0.09
22. 26 Boxworth End	13.73	13.81	0.08
23. 1 Hill Farm Cottages	50.48	50.63	0.15
24. Rhadegund Cottages	42.20	42.08	-0.12
25. Hackers Fruit Farm	43.48	43.38	-0.10

Sensitivity Test - Predicted Annual Mean NO$_2$ Concentrations (µg/m^3)			
Existing Short-Term Sensitive Receptors			
Receptor No & Description	2021 Without Development	2021 With Development	Change
R1. Green	13.37	13.53	0.16
R2. Allotments Rampt	13.78	13.99	0.21
R3. Oakington Rd	17.82	17.73	-0.09
R4. Westwick Farm	17.85	17.76	-0.09
R5. Water Lane	18.28	18.22	-0.06
R6. Oakington CofE	17.11	17.06	-0.05
R7. Car Centre	17.14	17.05	-0.09
R8. Garden Centre	20.34	20.17	-0.17
R9. White Horse	13.81	13.80	-0.01
R10. The Old School	13.12	13.13	0.01
R11. Green	13.46	13.50	0.04
R12. B1050	17.39	17.67	0.28
R13. 96 Boxworth End	14.98	15.10	0.12
R14. Trinity Foot PH	48.97	49.07	0.10
R15.Little Chef	56.85	57.02	0.17
R16. David Ball	62.22	62.08	-0.14
R17. Golf Course	31.33	31.26	-0.07

Sensitivity Test - Predicted Annual Mean PM$_{10}$ Concentrations (μg/m^3)			
Existing Long-Term Sensitive Receptors			
Receptor No & Description	2021 Without Development	2021 With Development	Change
1. 95 Rampton Rd	19.74	19.89	0.15
2. 55 High St	19.79	19.95	0.16
3. Old School	19.46	19.58	0.12
4. 95 Rampton Rd	19.54	19.67	0.13
5. 32 Oakington Rd	20.27	20.23	-0.04
6. 1 Westwick Cottage	21.98	21.91	-0.07
7. 91 Water Lane	21.15	21.10	-0.05
8. Oakington Primary	20.71	20.68	-0.03
9. 6 Oakington Rd	21.82	21.76	-0.06
10. 19 Dry Drayton Rd	22.11	22.05	-0.06
11. 1 Poplar Villas	22.58	22.52	-0.06
12. 43 Longstanton R	19.28	19.28	0.00
13. 20 St Michaels	19.14	19.15	0.01
14. Old School	19.81	19.93	0.12
15. Drakes Court	19.14	19.26	0.12
16. 125 High Street	18.97	19.06	0.09
17. Southwell	20.18	20.19	0.01
18. Redlands Lodge	21.06	21.04	-0.02
19. Hazelwell Cottag	23.68	24.19	0.51
20. Highfield Farm	19.36	19.71	0.35
21. 6 Ramper Rd	19.05	19.23	0.18
22. 26 Boxworth End	19.76	20.00	0.24
23. 1 Hill Farm Cottages	34.89	34.94	0.05
24. Rhadegund Cottages	31.11	31.18	0.07
25. Hackers Fruit Farm	31.77	31.80	0.03

Sensitivity Test - Predicted Annual Mean PM$_{10}$ Concentrations (μg/m^3)			
Existing Short-Term Sensitive Receptors			
Receptor No & Description	2021 Without Development	2021 With Development	Change
R1. Green	19.68	19.83	0.15
R2. Allotments Rampt	20.12	20.31	0.19
R3. Oakington Rd	22.45	22.37	-0.08
R4. Westwick Farm	22.34	22.25	-0.09
R5. Water Lane	22.73	22.65	-0.07
R6. Oakington CofE	21.84	21.78	-0.06
R7. Car Centre	22.26	22.20	-0.06
R8. Garden Centre	24.91	24.80	-0.11
R9. White Horse	19.70	19.70	0.00
R10. The Old School	19.07	19.13	0.06
R11. Green	19.21	19.35	0.14
R12. B1050	22.63	23.15	0.52
R13. 96 Boxworth End	20.92	21.34	0.42
R14. Trinity Foot PH	41.32	41.44	0.12
R15.Little Chef	38.85	38.91	0.06
R16. David Ball	44.82	44.99	0.17
R17. Golf Course	27.78	27.83	0.05

Sensitivity Test - Predicted 24-hourly Mean PM$_{10}$ Results – Number of Days >50µg/m^3			
Existing Long-Term Sensitive Receptors			
Receptor No & Description	**2021 Without Development**	**2021 With Development**	**Change**
1. 95 Rampton Rd	3	3	0
2. 55 High St	3	3	0
3. Old School	3	3	0
4. 95 Rampton Rd	3	3	0
5. 32 Oakington Rd	4	4	0
6. 1 Westwick Cottage	6	6	0
7. 91 Water Lane	5	5	0
8. Oakington Primary	4	4	0
9. 6 Oakington Rd	6	6	0
10.19 Dry Drayton Rd	6	6	0
11. 1 Poplar Villas	7	7	0
12. 43 Longstanton R	3	3	0
13. 20 St Michaels	2	2	0
14. Old School	3	3	0
15. Drakes Court	2	3	1
16. 125 High Street	2	2	0
17. Southwell	4	4	0
18. Redlands Lodge	5	5	0
19. Hazelwell Cottag	9	11	2
20. Highfield Farm	3	3	0
21. 6 Ramper Rd	2	3	1
22. 26 Boxworth End	3	3	0
23. 1 Hill Farm Cottages	49	49	0
24. Rhadegund Cottages	32	32	0
25. Hackers Fruit Farm	34	35	1

Sensitivity Test - Predicted 24-hourly Mean PM$_{10}$ Results – Number of Days >50µg/m^3			
Existing Short-Term Sensitive Receptors			
Receptor No & Description	**2021 Without Development**	**2021 With Development**	**Change**
R1. Green	3	3	0
R2. Allotments Rampt	4	4	0
R3. Oakington Rd	7	7	0
R4. Westwick Farm	7	7	0
R5. Water Lane	8	7	-1
R6. Oakington CofE	6	6	0
R7. Car Centre	7	7	0
R8. Garden Centre	12	12	0
R9. White Horse	3	3	0
R10. The Old School	2	2	0
R11. Green	3	3	0
R12. B1050	7	8	1
R13. 96 Boxworth End	5	5	0
R14. Trinity Foot PH	89	90	1
R15.Little Chef	72	72	0
R16. David Ball	117	118	1
R17. Golf Course	20	20	0