

Welsh Government

**M4 Corridor around Newport**

**Environmental Statement:**

**Volume 3**

**Appendix 7.2 Air Quality Baseline  
Environment**

M4CaN-DJV-EAQ-ZG\_GEN-AX-EB-0002

At Issue | March 2016

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# 1 Appendix 7.2 – Air Quality Baseline Environment

## 1.1 Introduction

1.1.1 This section includes tabulated baseline data used in the assessment of air quality effects (Chapter 7 of the ES).

## 1.2 Newport City Council

### Continuous Monitoring

**Table 7.2.1: Details of Continuous Monitoring Locations Operated by Newport City Council**

Site	Grid Reference	Site Type	Pollutants	Proximity to M4
St. Julians School	332418, 189603	Urban Background	NO, NO <sub>2</sub> , PM <sub>2.5</sub> , PM <sub>10</sub> , Benzene, PAH's	55m south of existing M4
M4 Junction 25A	332685, 189613	Roadside	Ozone, NO, NO <sub>2</sub>	10m north of existing M4

**Table 7.2.2: Monitored Pollutant Concentrations at Continuous Monitoring Locations (Exceedances of the relevant air quality standards are highlighted as bold)**

Site	Statistic	Standard	2010	2011	2012	2013	2014
St. Julians School	Annual Mean NO <sub>2</sub> (µg/m <sup>3</sup> )	40µg/m <sup>3</sup>	25	22	22	23	22
	No. hours > 200µg/m <sup>3</sup>	18 hours	5	N/A	0	0	1
	Annual Mean PM <sub>10</sub> (µg/m <sup>3</sup> )	40µg/m <sup>3</sup>	N/A	13	11	18	16
	No. days > 50µg/m <sup>3</sup>	35 Days	N/A	N/A	0	3	3
M4 Junction 25A	Annual Mean NO <sub>2</sub> (µg/m <sup>3</sup> )	40µg/m <sup>3</sup>	-	-	N/A	<b>59</b>	<b>56</b>
	No. hours > 200µg/m <sup>3</sup>	18 Hours	-	-	7	12	0

Note: N/A – Data capture was low (<75%) therefore the result has not been reported

## Diffusion Tubes

**Table 7.2.3: Details of Diffusion Tube Locations Operated by Newport City Council**

Site	Loaction	Easting	Northing	Site Type	In AQMA
NCC1	Chepstow Road	331995	188415	Kerbside	Y
NCC2	69 Glasllwch Crescent	328333	187869	Roadside	N
NCC3	13 Mill Street	334092	190822	Kerbside	N
NCC4	71 Glasllwch Crescent	328334	187884	Roadside	N
NCC5	Corporation Road	332327	187773	Kerbside	N
NCC6	153 Malpas Road	330564	189617	Roadside	Y
NCC7	Glasllwch Lane	328366	187323	Roadside	N
NCC8	High Street Caerleon	334105	190478	Kerbside	Y
NCC9	182 Corporation Road	332062	187958	Kerbside	N
NCC10	97 Chepstow Road	332093	188401	Roadside	Y
NCC11	169 Caerleon Road	332064	189102	Roadside	N
NCC12	73 George Street	331430	187498	Roadside	N
NCC13	Mont Road	330143	191742	Kerbside	N
NCC14	48 Malpas Road	330834	189310	Roadside	Y
NCC15	Glasllwch Crescent	328443	187809	Roadside	N
NCC16	40 Denbigh Road	332318	189703	Roadside	Y
NCC17	179 Malpas Road	330507	189664	Roadside	Y
NCC18	Bassaleg Road 158/3	328598	186991	Roadside	Y
NCC19	177 Malpas Road	330510	189680	Roadside	Y
NCC20	222 Corporation Road	332182	187872	Kerbside	N
NCC21	M4 Junction 25 1	332685	189613	Roadside	N
NCC22	88 Chepstow Road	332091	188382	Roadside	Y
NCC23	M4 Junction 25 2	332685	189613	Roadside	N
NCC24	Caerleon Road swift	331564	188548	Roadside	Y
NCC25	Denbigh Road	332301	189712	Kerbside	Y
NCC26	15 High Street, Caerleon	334131	190461	Roadside	Y
NCC27	18 High Street, Caerleon	334158	190437	Roadside	Y
NCC28	155 Caerleon Road	332046	189068	Roadside	Y
NCC29	Maindee Library	332015	188415	Roadside	Y
NCC30	1 Montgomery Road	330153	191742	Roadside	N
NCC31	Buckland Cottage	334944	189240	Roadside	Y
NCC32	372 Malpas Road	330414	190526	Roadside	Y
NCC33	162 Bassaleg Road	328539	186986	Roadside	Y
NCC34	The Priory Caerleon	334010	190532	Kerbside	N
NCC35	6 Castle Street	334232	190463	Kerbside	N
NCC36	1 Castle Street	334260	190479	Kerbside	N
NCC37	St Julians School 1	332418	189603	Urban Background	N

Site	Loaction	Easting	Northing	Site Type	In AQMA
NCC38	St Julians School 2	332418	189603	Urban Background	N
NCC39	St Julians School 3	332418	189603	Urban Background	N
NCC40	158 Bassaleg Road	328590	186992	Roadside	Y
NCC41	162/3 Bassaleg Road	328544	186975	Roadside	N
NCC42	Mendalgeif Road	330915	187046	Roadside	N
NCC43	7 Castle Street	334212	190446	Kerbside	N
NCC44	Malpas (Mont) 2	330146	191698	Kerbside	N
NCC45	515 Malpas Road	330441	190001	Roadside	N
NCC46	148 Chepstow Road	332290	188339	Roadside	Y
NCC47	9 Castle Street	334199	190431	Kerbside	N
NCC48	Cardiff Road	331100	187224	Kerbside	N
NCC49	40 Chepstow Road	331752	188444	Roadside	Y
NCC50	9 Caerleon Road	331531	188536	Roadside	Y
NCC51	19 Goldcroft Road	333751	190785	Kerbside	N
NCC52	9 Station Road	333880	190970	Kerbside	N
NCC53	5 High Street Caerleon	333598	190556	Roadside	N
NCC54	96/98 Mill Street	334279	190593	Kerbside	N
NCC55	116 Alexandra Road	331539	186225	Kerbside	N

**Table 7.2.4: Monitored Annual Mean NO<sub>2</sub> Concentrations (Exceedences of the relevant air quality standards are highlighted as bold)**

Site	Monitored Annual Mean NO <sub>2</sub> Concentrations (µg/m <sup>3</sup> )				
	2010	2011	2012	2013	2014
NCC1	<b>40</b>	39	34	<b>43</b>	34
NCC2	33	<b>40</b>	36	<b>40</b>	37
NCC3	-	-	22	24	20
NCC4	-	-	-	33	32
NCC5	36	<b>42</b>	36	38	35
NCC6	37	<b>40</b>	39	<b>43</b>	37
NCC7	32	35	34	<b>41</b>	35
NCC8	<b>44</b>	<b>45</b>	<b>48</b>	<b>51</b>	<b>43</b>
NCC9	-	-	-	35	33
NCC10	-	27	28	30	27
NCC11	35	38	37	38	33
NCC12	28	39	37	38	37
NCC13	<b>62</b>	<b>66</b>	<b>71</b>	<b>81</b>	<b>71</b>
NCC14	-	<b>42</b>	<b>41</b>	<b>45</b>	<b>41</b>
NCC15	33	32	34	36	31
NCC16	32	36	35	<b>41</b>	38
NCC17	31	34	33	33	32
NCC18	25	36	37	<b>41</b>	38
NCC19	28	35	35	39	38
NCC20	-	-	-	39	<b>42</b>
NCC21	-	-	-	<b>56</b>	<b>58</b>
NCC22	<b>40</b>	<b>44</b>	39	<b>42</b>	39
NCC23	-	-	-	<b>59</b>	<b>57</b>
NCC24	39	<b>44</b>	<b>42</b>	<b>44</b>	<b>40</b>

Site	Monitored Annual Mean NO <sub>2</sub> Concentrations (µg/m <sup>3</sup> )				
	2010	2011	2012	2013	2014
NCC25	26	29	28	32	29
NCC26	<b>60</b>	<b>63</b>	<b>57</b>	<b>68</b>	<b>54</b>
NCC27	<b>54</b>	<b>54</b>	<b>48</b>	<b>57</b>	<b>49</b>
NCC28	36	<b>41</b>	<b>40</b>	<b>42</b>	39
NCC29	32	31	31	32	26
NCC30	26	28	25	31	26
NCC31	34	<b>40</b>	<b>41</b>	<b>46</b>	<b>43</b>
NCC32	-	<b>40</b>	35	<b>40</b>	36
NCC33	33	32	32	34	33
NCC34	-	-	32	37	35
NCC35	-	-	31	36	31
NCC36	-	-	29	36	30
NCC37	24	19	21	24	21
NCC38	25	22	21	24	20
NCC39	25	23	19	24	21
NCC40	33	34	31	32	30
NCC41	30	33	34	39	35
NCC42	30	29	27	30	27
NCC43	-	39	35	37	33
NCC44	<b>47</b>	<b>52</b>	<b>51</b>	<b>57</b>	<b>51</b>
NCC45	30	31	28	30	25
NCC46	<b>46</b>	<b>56</b>	<b>46</b>	<b>53</b>	<b>46</b>
NCC47	<b>40</b>	<b>45</b>	39	<b>43</b>	<b>40</b>
NCC48	-	-	-	25	28
NCC49	26	26	27	27	26
NCC50	39	<b>46</b>	37	<b>42</b>	37
NCC51	-	22	20	21	17
NCC52	-	26	25	27	25
NCC53	-	30	24	28	23
NCC54	-	24	19	22	20
NCC55	32	35	32	36	33

## 1.3 Scheme Specific Monitoring

### Continuous Monitoring

**Table 7.2.5 Details of Continuous Monitoring Location Installed for Scheme Specific Monitoring**

Site	Grid Reference	Site Type	Pollutants	Proximity to M4
Newport Athletic Stadium (Commissioned by WG as part of the scheme)	333500, 186600	Roadside	NO, NO <sub>2</sub> , PM <sub>10</sub>	2.1km south of existing M4 (30m south of A48 Southern Distributor Road)

**Table 7.2.6: Monitored Pollutant Concentrations at Continuous Monitoring Location**

Site	Statistic	Standard	2014
Newport Athletic Stadium	Annual Mean NO <sub>2</sub> (µg/m <sup>3</sup> )	40µg/m <sup>3</sup>	23.5
	No. hours > 200µg/m <sup>3</sup>	18 hours	0
	Annual Mean PM <sub>10</sub> (µg/m <sup>3</sup> )	40µg/m <sup>3</sup>	17.4
	No. days > 50µg/m <sup>3</sup>	35 Days	4

## Diffusion Tubes

**Table 7.2.7: Details of Diffusion Tube Locations Installed for Scheme Specific Monitoring**

Site	Loaction	Easting	Northing	Site Type
1	Dyffryn School	330070	185000	Urban Background
2	Traston Road	333819	186276	Urban Background
3	Pont Estyll Lane	330134	183150	Background
4	Rush Wall	340021	185718	Background
5	Kensington Park	341928	187138	Urban Background
6	Stephenson Street	332381	186100	Roadside
7	Kidwelly Close	329025	184011	Urban Background
8	No.6 Langley Close	342284	187675	Urban Background
9	Manor Farm	341142	186983	Background
10	Whitson Court	337040	184612	Background
11	Pye Corner	334495	185151	Urban Background
12	Newport Stadium	333500	186600	Roadside
13	Corporation Road	333000	185630	Roadside
14	Spytty Lane	333500	186717	Roadside
15	Fosse Road	334136	186851	Urban Background
16	Brunel Street	331608	186279	Urban Background
17	Holiday Inn Express 1	328282	185074	Roadside
18	Holiday Inn Express 2	328282	185074	Urban Background
19	Berry Hill Farm	326901	184301	Background
20	A48, Berry Hill Farm	326840	184301	Roadside
21	St Julian's School	332499	189569	Road
22	Malpas Depot	330570	189789	Urban Background
23	Telegraph pole on Broadstreet Common	336372	185319	Background
24	Lamppost Badminton Road	332707	189615	Roadside

Note: The type of site has been defined according to criteria set out in LAQM TG(09)

**Table 7.2.8: 2014 Monitored Annual Mean NO<sub>2</sub> Concentrations (Exceedances of the relevant air quality standard are highlighted as bold)**

Site	Data Capture (%) 2014	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	Monitored Annual Mean NO <sub>2</sub> Concentrations	Bias Adjusted Annual Mean NO <sub>2</sub> Concentrations (Factor = 0.78)
		02/01/14 - 28/01/14	28/01/14 - 26/02/14	26/02/14 - 27/03/14	27/03/14 - 24/04/14	24/04/14 - 20/05/14	20/05/14 - 18/06/14	18/06/14 - 15/07/14	15/07/14 - 14/08/14	14/08/14 - 17/09/14	17/09/14 - 16/10/14	16/10/14 - 13/11/14	13/11/14 - 11/12/14		
Units - µg/m <sup>3</sup>															
1	100	31.1	21.3	30.5	37.5	23.9	24.5	20.4	19.0	24.4	27.5	26.2	38.8	27.3	21.3
2	100	27.5	19.9	24.9	23.2	16.3	11.8	13.7	9.9	19.2	23.7	17.3	31.6	20.4	15.9
3	100	25.2	11.7	21.8	22.4	14.8	13.6	12.7	10.9	18.7	17.9	16.9	32.3	18.5	14.5
4	100	15.7	10.6	20.1	17.2	13.2	8.1	10.7	8.3	14.9	16.2	13.6	26.6	14.8	11.5
5	100	33.1	14.4	21.5	23.0	14.1	11.4	12.7	11.7	14.7	19.9	18.0	32.1	18.9	14.8
6	92	26.9	no data	33.3	33.4	21.2	21.3	18.1	18.0	21.4	32.4	25.7	41.0	26.9	21.0
7	92	28.3	14.9	21.5	20.7	no data	9.8	10.0	10.0	16.2	21.2	16.9	32.5	19.1	14.9
8	100	38.2	12.4	29.6	28.9	19.5	16.0	14.7	14.9	21.7	24.5	20.8	35.4	23.4	18.2
9	100	22.2	15.3	23.6	26.2	16.4	13.3	13.3	11.7	19.3	21.4	15.8	33.4	19.4	15.1
10	85	13.8	no data	no data	16.8	7.9	6.7	8.5	5.1	11.5	13.7	10.4	25.9	12.3	9.6
11	100	15.1	14.0	22.7	22.9	15.1	10.8	12.2	11.5	17.6	18.8	13.6	31.0	17.3	13.5
12	92	36.2	27.1	38.1	34.7	22.1	no data	19.8	19.9	27.6	31.3	27.3	46.0	30.5	23.8
13	100	27.7	22.4	29.4	28.4	16.1	18.6	15.8	13.0	21.7	25.5	23.0	33.4	23.0	17.9
14	100	39.9	44.4	47.3	47.0	37.5	23.3	30.9	28.6	28.8	43.0	46.2	48.2	<b>40.0</b>	31.2
15	100	39.8	26.8	32.9	34.4	22.5	16.6	15.1	15.5	22.6	29.1	31.5	39.1	28.0	21.8
16	100	39.3	34.5	35.5	38.5	23.2	19.3	18.3	21.9	26.0	33.8	39.7	45.0	31.9	24.9
17	100	26.0	26.1	31.4	36.4	28.6	8.7	23.9	19.8	31.6	36.8	32.0	51.0	30.4	23.7
18	92	31.6	no data	34.6	33.7	22.7	14.0	16.6	14.9	25.6	32.4	27.1	45.5	27.7	21.6
19	100	32.2	16.0	32.6	29.0	22.9	19.9	22.7	27.4	42.5	26.7	21.3	38.9	27.9	21.7
20	100	42.1	29.5	50.8	56.4	34.7	26.0	17.2	18.2	28.4	48.5	32.3	70.0	38.7	30.2
21	77	45.2	32.7	34.7	33.1	22.9	no data	no data	15.8	no data	32.2	36.9	44.0	34.0	26.5

Site	Data Capture (%) 2014	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	Monitored Annual Mean NO <sub>2</sub> Concentrations	Bias Adjusted Annual Mean NO <sub>2</sub> Concentrations (Factor = 0.78)
		02/01/14 - 28/01/14	28/01/14 - 26/02/14	26/02/14 - 27/03/14	27/03/14 - 24/04/14	24/04/14 - 20/05/14	20/05/14 - 18/06/14	18/06/14 - 15/07/14	15/07/14 - 14/08/14	14/08/14 - 17/09/14	17/09/14 - 16/10/14	16/10/14 - 13/11/14	13/11/14 - 11/12/14		
Units - µg/m <sup>3</sup>															
22	92	51.2	no data	48.9	43.3	32.1	24.2	26.8	27.2	28.6	41.7	54.9	48.5	39.6	30.9
23	100	16.1	12.5	15.6	16.9	12.1	10.8	10.3	9.2	12.8	13.5	13.5	23.6	14.1	11.0
24	100	59.6	64.7	44.6	50.5	37.5	34.8	29.2	36.9	29.3	44.3	65.8	43.8	<b>46.6</b>	36.3

Note: 'no data' indicates that no data was available for this period due to loss of tube

## 1.4 Background Pollutant Concentrations

1.4.1 A comparison between modelled background pollutant concentrations and corresponding Defra modelled background concentrations has been undertaken.

**Table 7.2.9: Comparison Monitored Background Concentrations and Defra Published Concentrations**

ID	Name	Site Type	Monitored Annual Mean NO2 ( $\mu\text{g}/\text{m}^3$ )	Defra Modelled Annual Mean NO2 ( $\mu\text{g}/\text{m}^3$ )*	Difference
3	Pont Estyll Lane	Background	14.5	14.9	+0.5
4	Rushwall	Background	11.5	10.8	-0.7
9	Manor Farm	Background	15.1	13.6	-1.5
10	Whitston Court	Background	9.6	10.6	+1.0
19	Berry Hill Farm 1	Background	21.7	25.4	+3.7
23	Broadstreet Common	Background	11.0	11.8	+0.9
1	Dyffryn School	Urban Background	21.3	22.0	+0.7
2	Traston Rd	Urban Background	15.9	20.3	+4.4
5	Kenington Park	Urban Background	14.8	16.2	+1.4
7	Kidwelly Close	Urban Background	14.9	17.3	+2.4
8	Langley Close	Urban Background	18.2	19.1	+0.9
11	Pye Corner	Urban Background	13.5	15.2	+1.8
15	Fosse Road	Urban Background	21.8	26.2	+4.4
16	Brunel St	Urban Background	24.9	22.6	-2.3
18	Holiday Inn 2	Urban Background	21.6	26.6	+5.0
22	Malpas Depot	Urban Background	30.9	26.2	-4.7
NCC Continuous Monitor	St Julians School	Urban Background	22.0	26.6	+4.6

\* Modelled concentration taken from 1km x 1km grid square included in Defra maps in which the monitoring location lies for 2014