

Welsh Government

M4 Corridor around Newport

December 2016 Environmental
Statement Supplement
Appendix SS7.1: Inter-annual
Variability Test

M4CaN-DJV-EAQ-ZG-GEN_AX-EN-0001

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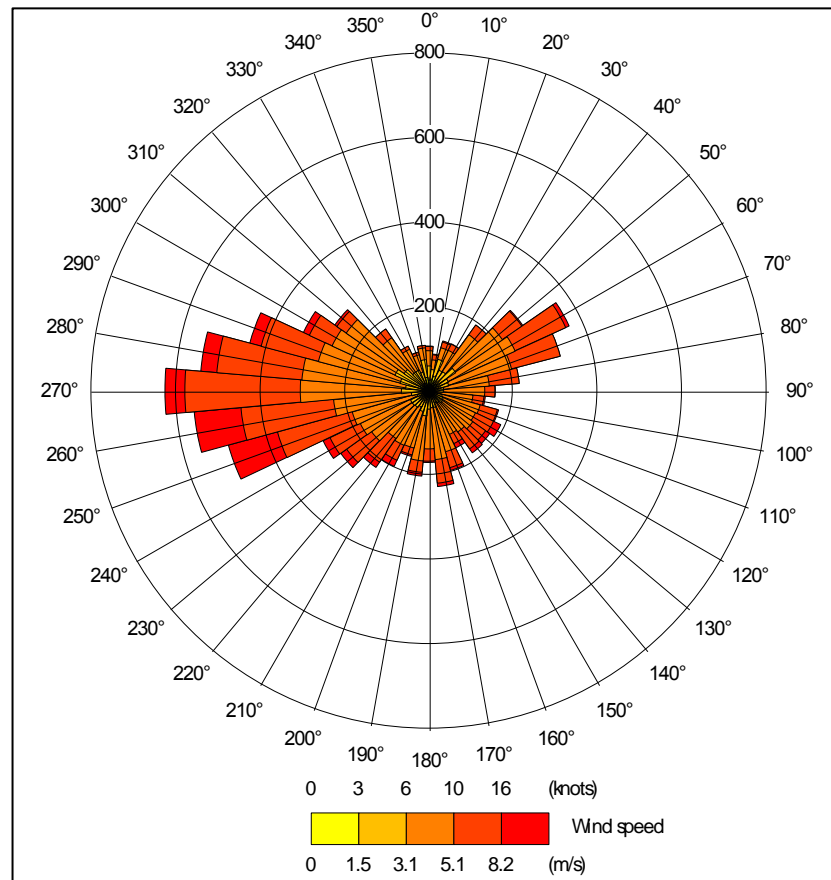
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1 Appendix SS7.1 – Inter-annual variability test

1.1 Meteorological Data

1.1.1 Modelling of operational air quality impacts as presented in the March 2016 Environmental Statement (ES) has been undertaken using meteorological data from Rhoose Airport for 2014 to align with the modelled base year. Diagram 7.1 below shows the wind direction and speed for 2014, which shows that the predominant wind direction is westerly.

Diagram 7.1: Wind Rose from Rhoose Airport Meteorological Station, 2014



1.1.2 Sensitivity testing has been undertaken for those human health receptors reported in the ES to assess inter-annual variability. Further modelling has been undertaken using meteorological data from Rhoose Airport for 2013 and 2015. Diagram 7.2 and 7.3 show the wind rose for the assessed years respectively. As shown in Diagram 7.2 and 7.3, conditions are similar in all years assessed with predominantly westerly winds.

Diagram 7.2: Wind Rose from Rhoose Airport Meteorological Station, 2013

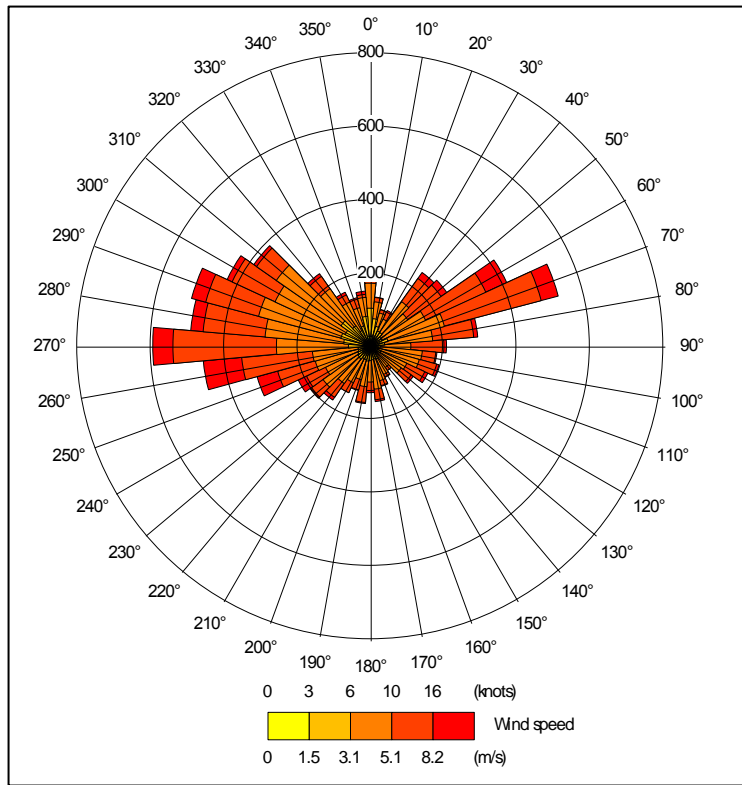


Diagram 7.3: Wind Rose from Rhoose Airport Meteorological Station, 2015

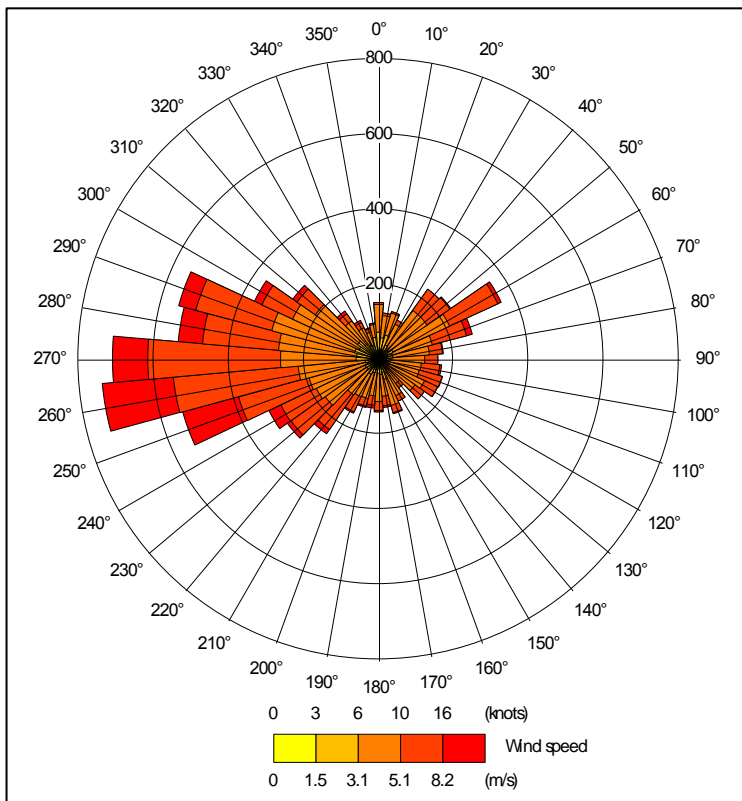


Table 7.1.3: Sensitivity Testing of Meteorological Data

Receptor ID	Location	Annual Mean NO ₂ Concentrations (µg/m ³)				
		Do Something 2022			2013 % Change	2015 % Change
		2013	2014	2015		
HH1	Pant-rhiw-goch	15.9	15.7	15.7	-1.5%	0.1%
HH2	Channel View	16.6	16.3	16.2	-1.5%	0.6%
HH3	Homeview	18.4	17.9	18.0	-2.8%	-0.3%
HH4	Longhouse	15.6	15.3	15.4	-1.6%	-0.1%
HH5	Berry Hill Farm	16.5	16.4	16.4	-0.4%	0.1%
HH6	Cefn Road	16.8	16.6	16.5	-1.4%	0.8%
HH7	Forge Road	16.6	16.4	16.1	-1.5%	2.1%
HH8	Pencarn Avenue	20.6	20.5	20.6	-0.4%	-0.1%
HH9	162 Bassaleg Road	19.8	19.6	19.0	-1.2%	3.0%
HH10	158 Bassaleg Road	21.4	21.6	21.3	0.9%	1.4%
HH11	Maesglas Close	19.8	20.1	19.9	1.6%	1.0%
HH12	Lighthouse Road	13.1	13.0	13.0	-1.0%	-0.1%
HH13	Fair Orchard Farm	14.1	13.9	13.9	-1.4%	-0.2%
HH14	179 Malpas Road	18.8	19.4	18.7	3.3%	3.7%
HH15	153 Malpas Road	21.8	21.8	21.8	0.0%	0.1%
HH16	Church Road	27.2	27.7	27.4	1.5%	1.0%
HH17	Alexandra Road	19.4	19.6	19.4	1.1%	1.1%
HH18	Stockton Road	22.9	22.1	22.0	-3.4%	0.7%
HH19	Caerleon Road	23.5	23.8	23.0	1.0%	3.3%
HH20	41 Denbigh Road	27.0	25.9	25.7	-4.3%	0.6%
HH21	40 Denbigh Road	27.9	26.6	26.4	-4.8%	0.8%
HH22	Caerleon Road North of J25	22.0	22.2	22.2	1.0%	0.2%
HH23	St Julians School	20.1	19.6	19.6	-2.1%	0.3%
HH24	Chepstow Road	24.0	24.5	24.2	2.1%	1.1%
HH25	Eveswell Primary School	21.8	22.0	21.8	1.0%	0.6%
HH26	Goya Close	21.1	20.5	20.3	-2.7%	1.0%
HH27	Spytty Lane	17.9	18.1	18.0	1.3%	0.8%
HH28	Coleg Gwent	22.7	22.7	22.7	-0.3%	0.0%
HH29	Christchurch Road	21.4	20.8	20.8	-2.7%	0.1%
HH30	Pye Corner Farm	13.9	13.7	13.7	-1.1%	0.1%
HH31	Malcolm Sargeant Close	20.2	20.3	20.1	0.7%	1.1%
HH32	Buckland Cottage	20.8	20.4	20.5	-1.9%	-0.2%
HH33	Tatton Farm	11.5	11.5	11.5	0.3%	0.4%
HH34	Mountbatten Close	16.3	16.2	16.1	-0.7%	0.7%
HH35	Chepstow Road	14.6	14.8	14.7	1.4%	0.5%
HH36	Old Langstone Court Road	16.2	16.5	16.3	2.1%	1.3%
HH37	Greenmoor Farm	9.8	9.6	9.6	-1.6%	-0.2%
HH38	Magor Road	11.8	12.0	11.9	1.7%	0.8%
HH39	Llandevenny	11.8	11.8	11.8	0.1%	0.5%
HH40	Barecroft Common	12.2	12.1	12.1	-0.5%	-0.3%
HH41	Green Moor Lane	13.3	13.2	13.3	-0.5%	-0.3%
HH42	Blenheim Gardens	13.2	13.1	13.1	-0.5%	-0.2%
HH43	Queens Gardens	13.3	13.2	13.2	-1.2%	0.0%
HH44	Newport Road	13.8	13.7	13.6	-1.1%	0.1%

Receptor ID	Location	Annual Mean NO2 Concentrations ($\mu\text{g}/\text{m}^3$)				
		Do Something 2022			2013 % Change	2015 % Change
		2013	2014	2015		
HH45	Langley Close	14.3	14.1	14.1	-2.1%	-0.1%
HH46	Grange Road	15.9	15.4	15.4	-3.3%	-0.1%
HH47	Knollbury	10.9	11.0	11.0	1.3%	0.6%
HH48	Rockfield Grove	11.7	11.6	11.6	-0.8%	0.3%
HH49	Court Farm	12.1	11.9	12.0	-0.9%	-0.2%
HH50	Caldicot Road 1	13.2	13.3	13.2	0.5%	0.7%
HH51	Caldicot Road 2	14.2	13.9	13.8	-2.2%	0.5%
HH52	Caldicot Road 3	12.5	12.6	12.5	0.2%	0.6%