



Appendix 6.4 – Construction Phase Road Traffic Impact Assessment Results

Crown Street Phase 3 and Plot D

Renaker Build Limited

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Construction Phase Road Traffic Impact Assessment Results

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Appendix 6.4 – Construction Phase Road Traffic Impact Assessment Results

As detailed in Section 6.41 of Chapter 6 the construction phases of the Site are likely to generate additional traffic on the local road network which may increase existing pollutant concentrations. Potential road traffic impacts were modelled using ADMS-Roads with results detailed in this Appendix.

Construction phase road traffic impacts were based on information provided by the Applicant during the 'bulk dig' stage where a maximum 24hr AADT of 90 during would be generated on the local road network. This comprises of 70 HGVs and 20 LGVs which was assumed to be distributed in its entirety on all the anticipated traffic routes to provide a unrealistic robust case scenario. Therefore no reduction to flows were applied due to traffic distributions at junctions.

The following sections present the predicted NO₂, PM₁₀ and PM_{2.5} concentrations and associated impacts. All impacts are defined as regional and temporary in nature, with exceedances of the relevant AQO are highlighted in **bold**.

Predicted Concentrations at Sensitive Human Receptors

Nitrogen Dioxide (NO₂)

Annual mean NO₂ concentrations are summarised in Table A6.4.1.

Table A6.4.1: Predicted Annual Mean NO₂ Concentrations

ID	Annual Mean Concentration (µg/m ³)			% Change in Concentration Relative to AQO	Long Term Average Concentration Relative to AQO	Impact Descriptor
	DM	DS	Change			
HR1	32.7	32.8	0.0	0.1	76-94%	Negligible
HR2	30.8	30.9	0.0	0.1	76-94%	Negligible
HR3	41.9	41.9	0.0	0.0	103-109%	Negligible
HR4	42.4	42.5	0.1	0.2	103-109%	Negligible
HR5	41.1	41.2	0.1	0.2	103-109%	Negligible
HR6	59.9	60.2	0.3	0.6	110+	Moderate Adverse
HR7	53.2	53.4	0.2	0.5	110+	Negligible
HR8	44.5	44.7	0.1	0.3	110+	Negligible
HR9	37.4	37.5	0.1	0.2	76-94%	Negligible
HR10	59.2	59.4	0.2	0.5	110+	Moderate Adverse
HR11	55.8	56.0	0.2	0.4	110+	Negligible
HR12	33.9	33.9	0.0	0.1	76-94%	Negligible
HR13	39.9	40.0	0.1	0.2	95-102%	Negligible
HR14	38.2	38.2	0.0	0.0	95-102%	Negligible
HR15	38.3	38.3	0.0	0.0	95-102%	Negligible
HR16	33.1	33.1	0.0	0.0	76-94%	Negligible
HR17	36.1	36.1	0.0	0.0	76-94%	Negligible
HR18	33.6	33.6	0.0	0.0	76-94%	Negligible
HR19	37.9	37.9	0.0	0.1	95-102%	Negligible
HR20	32.0	32.0	0.0	0.0	76-94%	Negligible

ID	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$)			% Change in Concentration Relative to AQO	Long Term Average Concentration Relative to AQO	Impact Descriptor
	DM	DS	Change			
HR21	47.9	48.1	0.2	0.4	110+	Negligible
HR22	42.4	42.5	0.2	0.4	103-109%	Negligible
HR23	36.6	36.7	0.1	0.3	76-94%	Negligible
HR24	33.9	34.0	0.1	0.2	76-94%	Negligible
HR25	58.7	58.8	0.1	0.4	110+	Negligible
HR26	59.0	59.1	0.1	0.3	110+	Negligible
HR27	56.2	56.3	0.2	0.4	110+	Negligible
HR28	34.9	34.9	0.0	0.0	76-94%	Negligible
HR29	34.3	34.4	0.0	0.1	76-94%	Negligible
HR30	32.5	32.5	0.0	0.0	76-94%	Negligible
HR31	38.3	38.3	0.0	0.0	95-102%	Negligible
HR32	36.4	36.4	0.0	0.0	76-94%	Negligible
HR33	38.9	38.9	0.0	0.0	95-102%	Negligible
HR34	36.8	36.8	0.0	0.0	76-94%	Negligible
HR35	33.7	33.7	0.0	0.0	76-94%	Negligible
HR36	32.5	32.5	0.0	0.0	76-94%	Negligible
HR37	46.0	46.0	0.0	0.0	110+	Negligible
HR38	44.0	44.0	0.0	0.0	110+	Negligible
HR39	46.9	46.9	0.0	0.0	110+	Negligible
HR40	45.9	45.9	0.0	0.0	110+	Negligible

As indicated in Table A6.4.1, annual mean NO₂ concentrations are predicted to exceed the relevant AQO at sensitive receptor locations during the DM and DS scenarios. No new exceedances of the annual mean AQO are anticipated as a result of construction phase road traffic impacts, with the remaining 23 receptor locations predicted to experience NO₂ concentrations below the relevant AQO.

Impacts on annual mean NO₂ concentrations as a result of construction phase road vehicle exhaust emissions are predicted to be negligible on a permanent basis at 38 sensitive receptor locations and moderate adverse on a permanent basis at 2 sensitive receptor locations.

The use of 2019 emission factors and peak 2026/2027 traffic flows is considered to produce a worse case assessment which overestimates actual impacts. The construction flows will be temporary in nature and are expected to reduce year on year following completion of each Phase which are to be built consecutively. Moreover, during the completion of the bulk dig stage construction traffic flows will reduce to a maximum of 28 AADT (28% HGV) which will significantly reduce associated impacts.

Particulate Matter (PM₁₀)

Annual mean PM₁₀ concentrations are summarised Table A6.4.2.

Table A6.4.2: Predicted Annual Mean PM₁₀ Concentrations

ID	Annual Mean Concentration (µg/m ³)			% Change in Concentration Relative to AQO	Long Term Average Concentration Relative to AQO	Impact Descriptor
	DM	DS	Change			
HR1	15.1	15.1	0.0	0.0	75% or Less	Negligible
HR2	14.7	14.7	0.0	0.0	75% or Less	Negligible
HR3	16.5	16.5	0.0	0.0	75% or Less	Negligible
HR4	16.4	16.4	0.0	0.0	75% or Less	Negligible
HR5	16.2	16.2	0.0	0.0	75% or Less	Negligible
HR6	18.6	18.7	0.0	0.1	75% or Less	Negligible
HR7	17.6	17.7	0.0	0.0	75% or Less	Negligible
HR8	16.2	16.2	0.0	0.0	75% or Less	Negligible
HR9	15.3	15.4	0.0	0.0	75% or Less	Negligible
HR10	20.1	20.1	0.0	0.1	75% or Less	Negligible
HR11	19.3	19.4	0.0	0.1	75% or Less	Negligible
HR12	14.7	14.7	0.0	0.0	75% or Less	Negligible
HR13	16.4	16.4	0.0	0.0	75% or Less	Negligible
HR14	15.8	15.8	0.0	0.0	75% or Less	Negligible
HR15	15.9	15.9	0.0	0.0	75% or Less	Negligible
HR16	15.1	15.1	0.0	0.0	75% or Less	Negligible
HR17	15.6	15.6	0.0	0.0	75% or Less	Negligible
HR18	15.2	15.2	0.0	0.0	75% or Less	Negligible
HR19	16.1	16.1	0.0	0.0	75% or Less	Negligible
HR20	15.0	15.0	0.0	0.0	75% or Less	Negligible
HR21	16.8	16.8	0.0	0.0	75% or Less	Negligible
HR22	16.1	16.1	0.0	0.0	75% or Less	Negligible
HR23	15.3	15.4	0.0	0.0	75% or Less	Negligible
HR24	14.9	14.9	0.0	0.0	75% or Less	Negligible
HR25	17.8	17.8	0.0	0.0	75% or Less	Negligible
HR26	17.8	17.8	0.0	0.0	75% or Less	Negligible
HR27	17.4	17.4	0.0	0.0	75% or Less	Negligible
HR28	15.0	15.0	0.0	0.0	75% or Less	Negligible
HR29	15.3	15.3	0.0	0.0	75% or Less	Negligible
HR30	14.6	14.6	0.0	0.0	75% or Less	Negligible
HR31	15.2	15.2	0.0	0.0	75% or Less	Negligible
HR32	15.0	15.0	0.0	0.0	75% or Less	Negligible
HR33	15.5	15.5	0.0	0.0	75% or Less	Negligible
HR34	15.2	15.2	0.0	0.0	75% or Less	Negligible
HR35	14.9	14.9	0.0	0.0	75% or Less	Negligible

ID	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$)			% Change in Concentration Relative to AQO	Long Term Average Concentration Relative to AQO	Impact Descriptor
	DM	DS	Change			
HR36	14.7	14.7	0.0	0.0	75% or Less	Negligible
HR37	16.2	16.2	0.0	0.0	75% or Less	Negligible
HR38	16.6	16.6	0.0	0.0	75% or Less	Negligible
HR39	16.7	16.7	0.0	0.0	75% or Less	Negligible
HR40	16.1	16.1	0.0	0.0	75% or Less	Negligible

As indicated in Table A6.4.2 annual mean PM_{10} concentrations are below the AQO at all 40 receptor locations. Predicted impacts on annual mean PM_{10} concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be negligible on a temporary at all receptor locations.

Particulate Matter ($\text{PM}_{2.5}$)

Annual mean $\text{PM}_{2.5}$ concentrations are summarised Table A6.4.3.

Table A6.4.3: Predicted Annual Mean PM_{10} Concentrations

ID	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$)			% Change in Concentration Relative to AQO	Long Term Average Concentration Relative to AQO	Impact Descriptor
	DM	DS	Change			
HR1	9.7	9.7	0.0	0.0	75% or Less	Negligible
HR2	9.5	9.5	0.0	0.0	75% or Less	Negligible
HR3	10.6	10.6	0.0	0.0	75% or Less	Negligible
HR4	10.5	10.5	0.0	0.0	75% or Less	Negligible
HR5	10.4	10.4	0.0	0.0	75% or Less	Negligible
HR6	12.0	12.1	0.0	0.1	75% or Less	Negligible
HR7	11.4	11.4	0.0	0.0	75% or Less	Negligible
HR8	10.5	10.5	0.0	0.0	75% or Less	Negligible
HR9	9.9	9.9	0.0	0.0	75% or Less	Negligible
HR10	12.8	12.8	0.0	0.1	75% or Less	Negligible
HR11	12.3	12.3	0.0	0.1	75% or Less	Negligible
HR12	9.5	9.5	0.0	0.0	75% or Less	Negligible
HR13	10.4	10.4	0.0	0.0	75% or Less	Negligible
HR14	10.1	10.1	0.0	0.0	75% or Less	Negligible
HR15	10.2	10.2	0.0	0.0	75% or Less	Negligible
HR16	9.7	9.7	0.0	0.0	75% or Less	Negligible
HR17	10.0	10.0	0.0	0.0	75% or Less	Negligible
HR18	9.7	9.7	0.0	0.0	75% or Less	Negligible
HR19	10.2	10.2	0.0	0.0	75% or Less	Negligible
HR20	9.6	9.6	0.0	0.0	75% or Less	Negligible
HR21	10.8	10.8	0.0	0.0	75% or Less	Negligible
HR22	10.4	10.4	0.0	0.0	75% or Less	Negligible
HR23	9.9	9.9	0.0	0.0	75% or Less	Negligible
HR24	9.6	9.6	0.0	0.0	75% or Less	Negligible

ID	Annual Mean Concentration ($\mu\text{g}/\text{m}^3$)			% Change in Concentration Relative to AQO	Long Term Average Concentration Relative to AQO	Impact Descriptor
	DM	DS	Change			
HR25	11.6	11.6	0.0	0.0	75% or Less	Negligible
HR26	11.6	11.6	0.0	0.0	75% or Less	Negligible
HR27	11.3	11.3	0.0	0.1	75% or Less	Negligible
HR28	9.7	9.7	0.0	0.0	75% or Less	Negligible
HR29	9.8	9.8	0.0	0.0	75% or Less	Negligible
HR30	9.4	9.4	0.0	0.0	75% or Less	Negligible
HR31	9.9	9.9	0.0	0.0	75% or Less	Negligible
HR32	9.7	9.7	0.0	0.0	75% or Less	Negligible
HR33	10.0	10.0	0.0	0.0	75% or Less	Negligible
HR34	9.8	9.8	0.0	0.0	75% or Less	Negligible
HR35	9.6	9.6	0.0	0.0	75% or Less	Negligible
HR36	9.5	9.5	0.0	0.0	75% or Less	Negligible
HR37	10.5	10.5	0.0	0.0	75% or Less	Negligible
HR38	10.6	10.6	0.0	0.0	75% or Less	Negligible
HR39	10.8	10.8	0.0	0.0	75% or Less	Negligible
HR40	10.4	10.4	0.0	0.0	75% or Less	Negligible

As indicated in Table A6.4.3. annual mean $\text{PM}_{2.5}$ concentrations are below the AQO at all 40 receptor locations. Predicted impacts on annual mean $\text{PM}_{2.5}$ concentrations as a result of road vehicle exhaust emissions associated with the development were predicted to be negligible on a temporary at all receptor locations.

Given their transient nature, robust assumptions and minor adverse impact overall impact significance was determined to be not significant.

A detailed discussion of the associated impact significance is provided within the Sections 6.108 to 6.113 of the main ES Chapter.