

**SEVERN ROAD RESOURCE RECOVERY CENTRE
AVONMOUTH**

**AIR QUALITY – TECHNICAL APPENDIX 7-2
Traffic Emissions Assessment**

**September 2009
SLR Ref: 402.0036.00374**

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DRAWINGS

Drawing 7-2/1	DMRB Assessment Locations and Links
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1.0 TRAFFIC EMISSIONS SCREENING ASSESSMENT

This appendix presents the screening assessment of traffic emissions in relation to the development traffic resulting from the Proposed Application. This assessment should be read in conjunction with Chapter 7 - Air Quality. Reference to the Highways Chapter has been made where appropriate.

Sections 2 and 3 of this report contain the input values and assessment results respectively.

1.1 Methodology

The assessment of potential impacts associated with development traffic has been carried out using the UK Design Manual for Roads and Bridges (DMRB) screening method v1.03c' methodology. The DMRB methodology facilitates the prediction of pollutant concentrations near to roads, as a result of vehicle emissions.

Predicted concentrations at receptors are made using an empirical relationship using different emission factors for different vehicle types. These emission factors change from year to year as the technology in the vehicle fleet improves. The DMRB output for NO_x has been input into the NO_x:NO₂ calculator¹ to derive NO₂ concentrations (released by www.airquality.co.uk) based on the latest monitoring data study between 2003 and 2006.

1.2 Receptor Locations

Receptor locations have been selected to represent the worst case locations with respect to the affected roads, locations and distance to links are presented in Drawing 7-2/1.

1.3 Background Values

Diffusion tube monitoring data from Urban background locations DT9 and DT14 (see Drawing 7-2/1) was used as input to the DMRB model. Recorded data was averaged and subject to Bristol City Council Bias adjustment factors and Period to Annual Mean adjustment on the basis of Bristol St Pauls and Cwmbran AURN sites.

Table 1-1
Background Annual Mean Nitrogen oxides

Urban Background	Calculated Annual NO ₂ (2009)	Projected Annual NO ₂ (2014)
Average	25.3	20.4

Table Note: Annual Mean adjusted on the basis of average 'period to annual mean' from Bristol St Pauls and CwmBarn of 0.89. Bias adjusted using factor from BCC USA (2009) of 0.905.

¹ <http://www.airquality.co.uk/archive/laqm/tools.php>

2.0 DMRB INPUT VALUES

Table 2-1
Input data at Receptor R1 (Avonmouth)

	Link	Distance to link	Traffic Flows 24 Hour (AADT)	HDV Flows 24 Hour (AADT)	LDV %	HDV %	Average Speed (km/h)
Baseline (2009)	AB	20	10791	2525	76.6	23.4	65
	CD	19	3043	495	83.7	16.3	48
Projected Baseline (2014)	AB	20	18230	2525	86.1	13.9	65
	CD	19	4490	495	89.0	11.0	48
With development (2014)	AB	20	18439	2682	85.5	14.5	65
	CD	19	4490	495	89.0	11.0	48

Table Note: Link Information

AB: St Andrews Road - Crowley Way (Average of counts)

CD: McLaren Road - King Road Ave (Average of counts)

Table 2-2
Input data at Receptor R2 (Severn Beach)

	Link	Distance to link	Traffic Flows 24 Hour (AADT)	HDV Flows 24 Hour (AADT)	LDV %	HDV %	Average Speed (km/h)
Baseline (2009)	AB	26	7150	1205	83.2	16.8	80
Projected Baseline (2014)	AB	26	10910	1205	89.0	11.0	80
With development (2014)	AB	26	11118	1361	87.8	12.2	80

Table Note: Link Information

AB: Severn Road (West) - Severn Road South (Average of counts)

**Table 2-3
 Input data at Receptor R3 (Pilning)**

	Link	Distance to link	Traffic Flows 24 Hour (AADT)	HDV Flows 24 Hour (AADT)	LDV %	HDV %	Average Speed (km/h)
Baseline (2009)	AB	21	7675	1154	85.0	15.0	80
	CD	21	2642	55	97.9	2.1	48
	EF	50	3595	132	96.3	3.7	48
Projected Baseline (2014)	AB	21	11434	1154	89.9	10.1	80
	CD	21	2642	55	97.9	2.1	48
	EF	50	3595	132	96.3	3.7	48
With development (2014)	AB	21	11643	1311	88.7	11.3	80
	CD	21	2642	55	97.9	2.1	48
	EF	50	3595	132	96.3	3.7	48

Table Note: Link Information
 AB: Severn Road North
 CD: Redwick Road West
 EF: Redwick Road East

3.0 DMRB ASSESSMENT RESULTS

Table 3-1
Predicted NO₂ and PM₁₀ Concentrations at Receptor R1 (Avonmouth)

Scenario	NO ₂ Road Increment	NO ₂ Total	PM ₁₀ Road Increment	PM ₁₀ Total	No Days > 50
Baseline (2009)	12.86	38.16	2.56	20.36	4
Projected Baseline (2014)	9.74	28.34	1.64	18.84	2
With Development (2014)	10.02	28.62	1.67	18.87	2
Increase With development		1.0%		0.2%	0

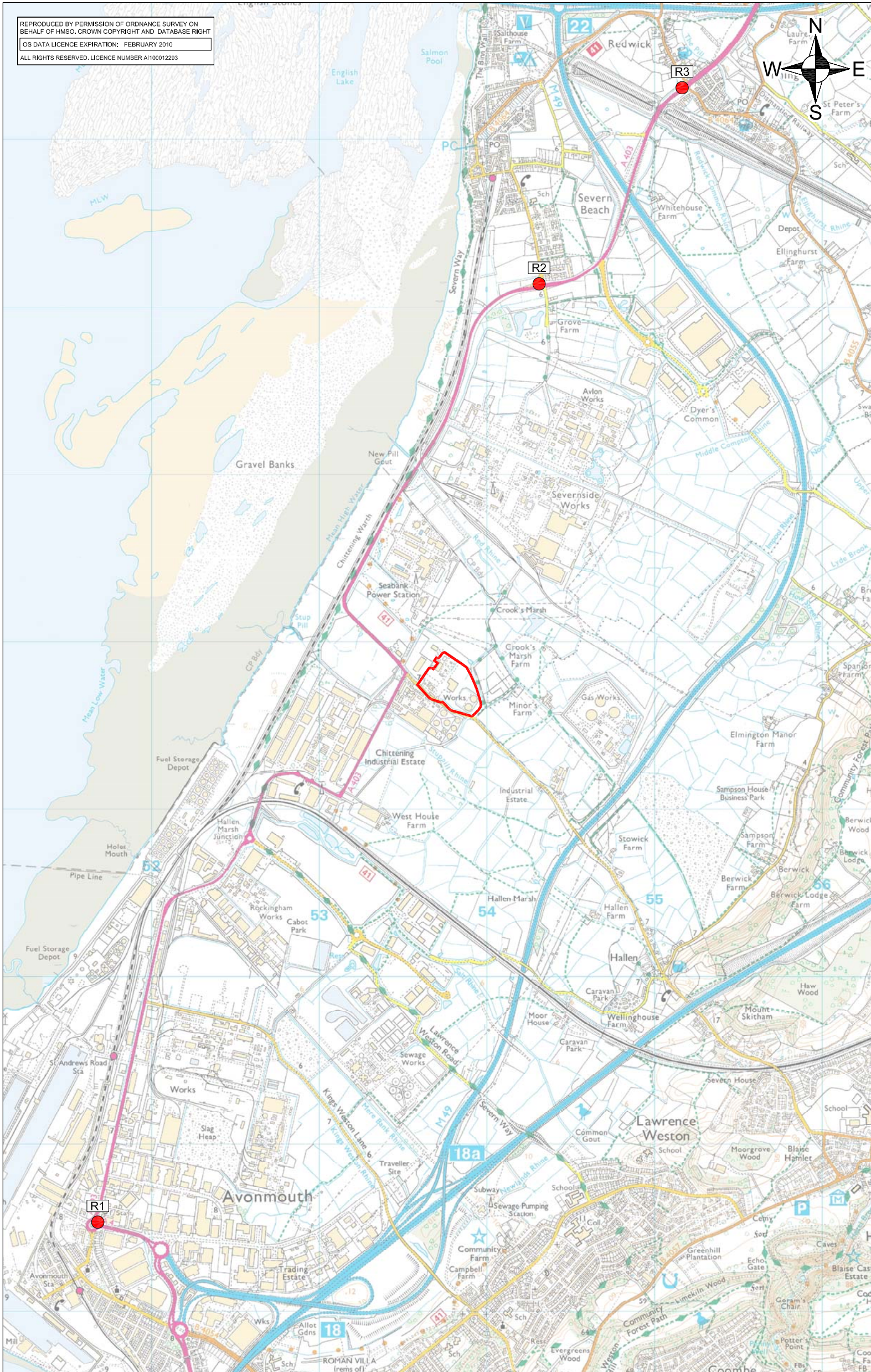
Table 3-2
Predicted NO₂ and PM₁₀ Concentrations at Receptor R2 (Severn Beach)

Scenario	NO ₂ Road Increment	NO ₂ Total	PM ₁₀ Road Increment	PM ₁₀ Total	No Days > 50
Baseline (2009)	5.02	30.32	2.56	17.43	1
Projected Baseline (2014)	4.11	24.51	1.64	16.50	1
With Development (2014)	4.45	24.85	1.67	16.54	1
Increase With development		1.4%		0.2%	0


Table 3-3
Predicted NO₂ and PM₁₀ Concentrations at Receptor R3 (Pilning)


Scenario	NO ₂ Road Increment	NO ₂ Total	PM ₁₀ Road Increment	PM ₁₀ Total	No Days > 50
Baseline (2009)	6.77	32.07	1.39	18.39	2
Projected Baseline (2014)	5.57	25.97	1.06	17.26	1
With Development (2014)	5.95	26.35	1.10	17.30	1
Increase With development		1.5%		0.3%	0

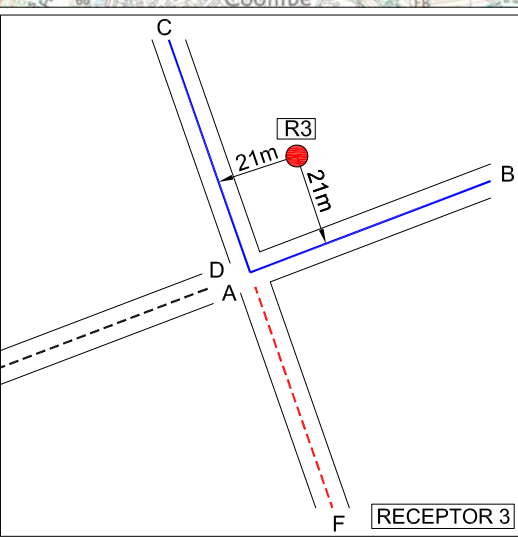
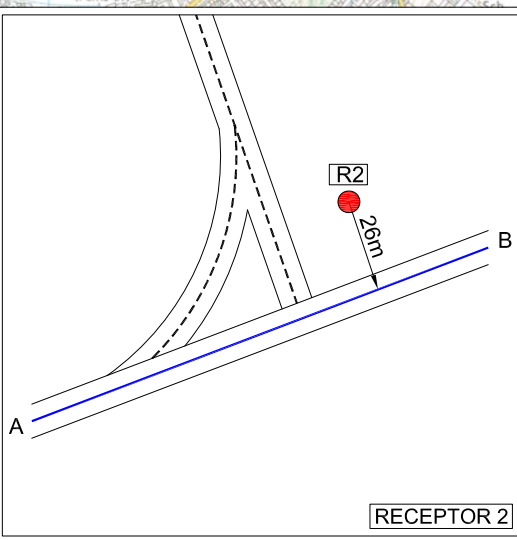
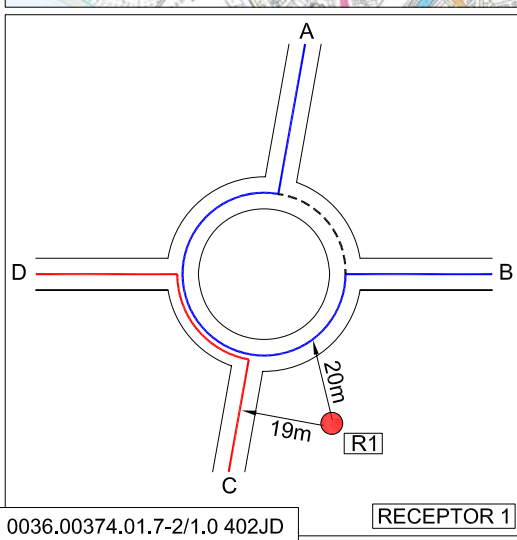
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LEGEND

 SITE BOUNDARY

 RECEPTOR LOCATION



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AVONMOUTH RESOURCE RECOVERY CENTRE

AIR QUALITY ASSESSMENT

DMRB ASSESSMENT LOCATIONS & LINKS

7-2/1

Scale 1:25,000 @ A3 Date SEPTEMBER 2009