



SPECIALIST GROUNDWATER STUDY

**POTENTIAL IMPACT OF THE PROPOSED
N21 (R300) CAPE TOWN RING ROAD**

ADDENDUM REPORT 1

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1 INTRODUCTION

The South African National Roads Agency Limited (SANRAL) awarded Scheme Developer status to the Peninsula Expressway Consortium (Penway) in January 2000 to develop Penway's unsolicited proposal for the N21 (R300) Cape Town ring road toll project. The proposal included the private financing of the project, construction of new sections, upgrade of the existing road and maintenance, operations and tolling of the entire route. Penway and SANRAL entered into a Public Private Partnership to develop the scheme and concluded a formal agreement in January 2000. Both parties are jointly responsible for the transparent development of the scheme, the route of which is shown in Figure 1.

The initial Phase of Scheme Development was completed in December 2001 and included a Scoping Study, undertaken by Chand/Ecosense Joint Venture (CEJV), from February to November 2000 (CEJV, 2000). It was recommended groundwater be one of the issues to be addressed in the Environmental Impact Assessment (EIA). A specialist groundwater study of the proposed development was completed in November 2002 (Parsons and Associates, 2002) which described geohydrological conditions encountered along the proposed route and assessed potential impacts that may result from construction of the N21 (R300) Cape Town ring road. It was concluded potential impacts are of low significance, particularly if appropriate mitigation measures are adopted. It was also concluded road construction could have a positive impact on the state of Zeekoevlei if an agricultural drain was installed alongside the road which prevents the subsurface migration of sewage effluent from the Cape Flats wastewater treatment works into the vlei.

2 TERMS OF REFERENCE

In June 2002, CEJV requested Parsons and Associates to submit a costing to evaluate re-alignment of the Northern Greenfields Sections (Sector 3). Instruction to proceed with the follow-up assessment was issued by CEJV on 14 August 2003 in which Parsons and Associates were asked to undertake:

- A geohydrological assessment of the proposed northern re-alignment of Sector 3 – referred to as the "farmers alternative"
- A geohydrological assessment of "alternative B1" and "alternative B2", which refer to alternative alignments within the "farmers alternative"

The assessment was to be undertaken on the same basis as the earlier specialist groundwater investigation (Parsons and Associates, 2002).

3 APPROACH TO STUDY

Assessment of the re-alignment of Sector 3 was based on all information gathered and analysed as part of the 2002 study (Parsons and Associates, 2002) and a reconnaissance drive along various roads between the farms Vrymansfontein and Lochlyne and the proposed crossing of the N7 near Morning Star. The reconnaissance drive was undertaken on 18 August 2003, together with the EIA project team.

Assumptions and limitations to the specialist study and the method of assessment documented in the Parsons and Associates 2002 report remain valid.

3 ASSESSMENT OF PROPOSED RE-ALIGNMENT

The proposed re-alignment of Sector 3 takes place in the north-eastern part of the proposed development (Figure 1), which is predominantly underlain by weathered sedimentary rocks of the Malmesbury Group. The description of the physical environment, identified sources of risk and the impact description and assessment presented in the Parsons and Associates (2002) report remain valid.

Based on available information and observations made during the 18 August 2003 reconnaissance drive, the proposed re-alignments (including “alternative B1” and “alternative B2”) will not result in any change to the impacts predicted in the 2002 assessment. The tables presented in Parsons and Associates (2002) hence remain valid (Tables 1 to 9). Potential impacts from the proposed development could result from blasting, groundwater abstraction, modification to groundwater flow, accidental spills and sewage and waste generated from the toll plazas. Assessment of these impacts and possible mitigation measures suggests all are of low significance. Important mitigation measures include identification of boreholes likely to be impacted by blasting, controlled blasting to limit impacts, acceptable groundwater abstraction rates (if used), ensuring adequate movement of surface and subsurface flow through the use of culverts at appropriate places and having emergency response plans in place in the event of accidental chemical spills.

5 CONCLUSIONS

Based on available information and observations made during the 18 August 2003 reconnaissance drive, the proposed re-alignments (including “alternative B1” and “alternative B2”) will not result in any change to the impacts predicted in the 2002 assessment. The report prepared by Parsons and Associates (2002) hence remains valid and does not require any amendments or adjustments.

6 REFERENCES

Parsons and Associates (2002) Specialist groundwater study – Potential impact of the proposed N21 (R300) Cape Town Ring Road; Report 115/RING-F1 submitted to Chand & Ecosense Joint Venture by Parsons and Associates Specialist Groundwater Consultants, Somerset West.

Table 1: Reduction of available water resources as a result of road construction

IMPACT ASSESSMENT CRITERIA										
	Extent	Duration	Intensity			Status	Significance	Confidence	Probability	Applicable Legislation
			Qualitative	Quantitative	Community response					
Without mitigation	L	H	L-	L-	L-	-	L	L	H	ECA / NWA
With mitigation	L	H	L-	L-	L-	-	L	L	H	ECA / NWA

Table 2: Impact to aquifer properties and borehole yield and structure as a result of blasting

IMPACT ASSESSMENT CRITERIA										
	Extent	Duration	Intensity			Status	Significance	Confidence	Probability	Applicable Legislation
			Qualitative	Quantitative	Community response					
Without mitigation	L	H	L-		L-	-	L	M	L	ECA / NWA
With mitigation	L	H	L-		L-	-	L	H	L	ECA / NWA

Table 3: Localised over-exploitation of the resource as a result of groundwater abstraction during construction

IMPACT ASSESSMENT CRITERIA										
	Extent	Duration	Intensity			Status	Significance	Confidence	Probability	Applicable Legislation
			Qualitative	Quantitative	Community response					
Without mitigation	L	L	L-			-	L	H	L	ECA / NWA
With mitigation	L	L	L-			-	L	H	L	ECA / NWA

Table 4: Restriction of localised surface and subsurface flow by road

IMPACT ASSESSMENT CRITERIA										
	Extent	Duration	Intensity			Status	Significance	Confidence	Probability	Applicable Legislation
			Qualitative	Quantitative	Community response					
Without mitigation	L	H	M-	M-	L-	-	M	M	M	ECA / NWA
With mitigation	L	H	L-	L-	L-	-	L	H	L	ECA / NWA

Table 5: Modification of subsurface seepage at Standfontein WWTW by road

IMPACT ASSESSMENT CRITERIA										
	Extent	Duration	Intensity			Status	Significance	Confidence	Probability	Applicable Legislation
			Qualitative	Quantitative	Community response					
Without mitigation	L	H	L-	L-		+	M	H	M	ECA / NWA
With mitigation	L	H	H+	H+		+	H	H	H	ECA / NWA

Table 6: Increased flooding of low lying areas in the Cape Flats due to increased run-off

IMPACT ASSESSMENT CRITERIA										
	Extent	Duration	Intensity			Status	Significance	Confidence	Probability	Applicable Legislation
			Qualitative	Quantitative	Community response					
Without mitigation	L	L	M-	M-	M-	-	L	H	L	ECA / NWA
With mitigation	L	L	L-	L-	L-	-	L	H	L	ECA / NWA

Table 7: Potential modification to subsurface flow at Bloubergsvlei by road alignment and construction

IMPACT ASSESSMENT CRITERIA										
	Extent	Duration	Intensity			Status	Significance	Confidence	Probability	Applicable Legislation
			Qualitative	Quantitative	Community response					
Without mitigation	L	H	M-	M-		-	L	M	L	ECA / NWA
With mitigation	L	H	L-	L-		-	L	H	L	ECA / NWA

Table 8: Groundwater contamination caused by accidental spills

IMPACT ASSESSMENT CRITERIA										
	Extent	Duration	Intensity			Status	Significance	Confidence	Probability	Applicable Legislation
			Qualitative	Quantitative	Community response					
Without mitigation	L	H	H-	H-	H-	-	M	H	L	ECA / NWA
With mitigation	L	H	L-	L-	L-	-	L	H	L	ECA / NWA

Table 9: Groundwater contamination caused by sewage and waste

IMPACT ASSESSMENT CRITERIA										
	Extent	Duration	Intensity			Status	Significance	Confidence	Probability	Applicable Legislation
			Qualitative	Quantitative	Community response					
Without mitigation	L	H	L-	L-		-	L	H	L	ECA / NWA
With mitigation	L	H	L-	L-		-	L	H	L	ECA / NWA

