

Appendix H:

**Supporting annexures for the
traffic specialist study
presented in Chapter 7**

ANNEXURE A

Morning Peak Hour Staff Traffic Movements Generated during Construction Phase (Inbound Only)

Month	Phase 1 Staff		Phase 2 Staff		Total Staff	Cars		Total Cars	Buses for general staff		Total Buses	Total Traffic (In)
	Skilled & Managers	General Staff	Skilled & Managers	General Staff		Phase I	Phase II		Phase I	Phase II		
Jan-07	60	140			200	10		10	3		3	13
Feb-07	150	350			500	25		25	7		7	32
Mar-07	240	560			800	40		40	11		11	51
Apr-07	300	700			1000	50		50	14		14	64
May-07	300	700			1000	50		50	14		14	64
Jun-07	300	700			1000	50		50	14		14	64
Jul-07	300	700	60	140	1200	50	10	60	14	3	17	77
Aug-07	300	700	150	350	1500	50	25	75	14	7	21	96
Sep-07	300	700	240	560	1800	50	40	90	14	11	25	115
Oct-07	300	700	300	700	2000	50	50	100	14	14	28	128
Nov-07	300	700	300	700	2000	50	50	100	14	14	28	128
Dec-07	300	700	300	700	2000	50	50	100	14	14	28	128
Jan-08	300	700	300	700	2000	50	50	100	14	14	28	128
Feb-08	300	700	300	700	2000	50	50	100	14	14	28	128
Mar-08	300	700	300	700	2000	50	50	100	14	14	28	128
Apr-08	240	560	300	700	1800	40	50	90	11	14	25	115
May-08	90	210	300	700	1300	15	50	65	4	14	18	83
Jun-08			300	700	1000		50	50		14	14	64
Jul-08			300	700	1000		50	50		14	14	64
Aug-08			300	700	1000		50	50		14	14	64
Sep-08			300	700	1000		50	50		14	14	64
Oct-08			240	560	800		40	40		11	11	51
Nov-08			90	210	210		15	15		4	4	19

Assumptions:

- Phase 1 and Phase 2 will each employ 1 000 persons during their peak construction periods
- Phase 1 and Phase 2 peak construction periods will overlap to have a cumulative traffic impact.
- The staff composition and use of transport modes will be as follows
 - Managers 5% (Use cars with an average occupancy of 1.5 persons per car) and park on site during the day
 - Skilled workers 25% (20% of these use cars with an average occupancy of 3 persons per car, 80% use buses carrying 50 persons per bus).
 - General Staff 70% (locally employed and use contracted buses carrying 70 persons per bus).
- Buses carrying skilled worker from Coega Village remain on site during the day.
- Contracted buses carrying general staff return to Algoa Bus Company depot in Markman in the peak hour.

ANNEXURE B

Daily Heavy Vehicle Trips Delivering Construction Materials (Inbound)

Month	Armour Rock Delivery		Cement Delivery				Aggregate Delivery				Other daily vehicle movements		Total Daily Inbound Movements	Trips per Hour In and Out		
	Phase II		Phase I		Phase II		Phase I		Phase II		Phase I	Phase II				
	m ³ /month	Trucks /day	Tons /month	Trucks /day	Tons /month	Trucks /day	Tons /month	Trucks /day	Tons/month	Trucks /day						
Jan-07			149	1			472	1					10		12	2
Feb-07			135	1			430	1					15		17	3
Mar-07			3181	4			10107	18					30		52	10
Apr-07			5232	7			16627	30					30		67	13
May-07			6130	8			19481	36					30		74	15
Jun-07			4613	6			14660	27					30		63	13
Jul-07	0	0	7134	9	367	1	22671	41	1167	2	30	10	30		93	19
Aug-07	0	0	7090	9	585	1	22531	41	1860	3	30	15	30		99	20
Sep-07	7000	34	6655	9	4531	6	21147	38	14397	26	30	20	30		163	33
Oct-07	15000	72	7511	10	7482	10	23868	43	23777	43	30	30	30		238	48
Nov-07	15000	72	6070	8	12880	17	19289	35	40931	74	30	30	30		266	53
Dec-07	15000	72	6529	9	9788	13	20748	38	31105	57	15	30	30		234	47
Jan-08	15000	72	6476	9	12084	16	50579	38	38401	70	10	30	30		245	49
Feb-08	10000	48	2597	4	11815	16	8253	15	37546	68	10	30	30		191	38
Mar-08	5000	24	4753	6	6880	9	15105	28	21862	40		30	30		137	27
Apr-08	5000	24	2126	3	7736	10	6757	12	24583	45		30	30		124	25
May-08	5000	24			6070	8			19289	35		30	30		97	19
Jun-08					6529	9			20748	38		30	30		77	15
Jul-08					6476	9			20579	38		30	30		77	15
Aug-08					2597	3			8253	15		30	30		48	10
Sep-08					4753	6			15105	28		15	30		49	10
Oct-08					2126	3			6757	12		10	30		25	5
Nov-08					0	0			0	0		10	30		10	2

Assumptions:

1. Monthly quantities of construction materials have been converted to daily quantities assuming 22 working days per month
2. Daily heavy vehicle trips have been converted to hourly movements assuming 10 working hours per day.
3. Armour rock will be obtained from Coega Wes Quarry and transported along Neptune Road in 15 ton trucks (1.58 tons/m³)
4. Aggregate for concrete will be obtained from Coega Wes Quarry and transported along Neptune Road in 25 ton trucks.
5. Cement will be obtained from suppliers in Port Elizabeth and transported along the N2 in 35 ton truck and trailer combinations.
6. Other daily vehicle movements include delivery of equipment and other construction materials etc.

ANNEXURE C

Calculation of the traffic volume to capacity ratio and average vehicle delay during the morning peak hour at the signal controlled intersection of Addo Road and Dibanisa Road, currently (2006) and during the peak construction period (2008). This was done using the SIDRA suite of computer programmes for analysing signalised intersections, which are based on the Highway Capacity Manual (HCM) method.

A basic saturation flow of 1 900 veh/hr/lane was used in the SIDRA programme, with a practical degree of saturation of 90%. These are the parameters normally used by the NMB municipality's traffic engineers when they analyse the performance of signalised intersections in the metropolitan area with the SIDRA computer programme.

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ADDO ROAD / DIBANISA ROAD INTERSECTION
EXISTING WEEKDAY AM PEAK HOUR TRAFFIC 2006 (06:30 - 07:30)
Intersection ID:
Fixed-Time Signals, Cycle Time = 90

Table S.4 - PHASE INFORMATION

```

-----
Phase Change Times: 0, 40, 55
Phase Green Times: 35, 10, 30
-----
Current Phase Sequence No.: 1
Input phase sequence: A B C
Output phase sequence: A B C
-----

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ADDO ROAD / DIBANISA ROAD INTERSECTION
EXISTING WEEKDAY AM PEAK HOUR TRAFFIC 2006 (06:30 - 07:30)
Intersection ID:
Fixed-Time Signals, Cycle Time = 90

Table S.15 - CAPACITY AND LEVEL OF SERVICE

```

-----
Mov   Mov   Green Time   Total   Total   Deg.   Aver.   LOS
No.   Typ   Ratio (g/C)   Flow   Cap.   of     Delay
                -----   (veh   (veh   Satn
                1st 2nd   /h)    /h)    (v/c) (sec)
                grn grn
-----
South: ADDO ROAD (N2)
  1 L           0.389           126   189   0.665   33.5   C
  2 T           0.389           384   577   0.666   24.5   C
  3 R           0.111  0.111           19    346   0.055   36.4   D
                -----
                529   1112   0.666   27.1   C
-----
East: DIBANISA ROAD (COEGA)
  4 L (Und) 0.278 0.267           16    781   0.020   14.5   B
  5 T           0.333           7     150   0.047   22.6   C
  6 R           0.311           16    342   0.047   31.6   C
                -----
                39   1272   0.047   22.9   C
-----
North: ADDO ROAD
  7 L (Und) 0.389 0.500           16     19   0.830   41.0   D
  8 T           0.389*           629   754   0.834*  32.3   C
  9 R           0.178  0.111*           32    409   0.078   31.6   C
                -----
                677   1182   0.834   32.4   C
-----
West: DIBANISA ROAD
 10 L           0.333           44    423   0.104   31.2   C
 11 T           0.333           23    221   0.104   22.2   C
 12 R           0.333*           312   503   0.621   36.7   D
                -----
                379   1146   0.621   35.2   D
-----
ALL VEHICLES:           1624   4712   0.834   31.1   C
-----
INTERSECTION (persons): 2436   4712   0.834   31.1
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Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition. For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.
* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---

Appendix H : Annexures for the traffic specialist study

ADDO ROAD / DIBANISA ROAD INTERSECTION
FUTURE WEEKDAY AM PEAK HOUR TRAFFIC 2008 (06:30 - 07:30)
Intersection ID:
Fixed-Time Signals, Cycle Time = 90

Table S.4 - PHASE INFORMATION

```

-----
Phase Change Times: 0, 40, 55
Phase Green Times: 35, 10, 30
-----
Current Phase Sequence No.: 1
Input phase sequence: A B C
Output phase sequence: A B C
    
```

ADDO ROAD / DIBANISA ROAD INTERSECTION
FUTURE WEEKDAY AM PEAK HOUR TRAFFIC 2008 (06:30 - 07:30)
Intersection ID:
Fixed-Time Signals, Cycle Time = 90

Table S.15 - CAPACITY AND LEVEL OF SERVICE

```

-----
Mov   Mov   Green Time   Total   Total   Deg.   Aver.   LOS
No.   Typ   Ratio (g/C)   Flow   Cap.   of     Delay
                -----   (veh   (veh   Satn
                1st  2nd   /h)    /h)    (v/c)  (sec)
                grn  grn
-----
South: ADDO ROAD (N2)
  1 L           0.389           136   189   0.720   34.2   C
  2 T           0.389           415   577   0.720   25.2   C
  3 R           0.078  0.111           21    318   0.066   39.4   D
-----
                               572   1084   0.720   27.9   C
-----
East: DIBANISA ROAD (COEGA)
  4 L (Und)  0.233  0.256           18    732   0.025   16.2   B
  5 T           0.333           15    226   0.066   22.8   C
  6 R           0.300           18    271   0.067   31.8   C
-----
                               51   1229   0.067   23.6   C
-----
North: ADDO ROAD
  7 L (Und)  0.389  0.489           24    26   0.911*   50.8   D
  8 T           0.389*           680   747   0.910   42.1   D
  9 R           0.156  0.111*           35    384   0.091   33.4   C
-----
                               739   1158   0.911   41.9   D
-----
West: DIBANISA ROAD
 10 L           0.333           48    315   0.153   31.6   C
 11 T           0.333           51    334   0.153   22.6   C
 12 R           0.333*           337   496   0.679   37.8   D
-----
                               436   1145   0.679   35.3   D
-----
ALL VEHICLES:                               1798   4615   0.911   35.3   D
-----
INTERSECTION (persons):                       2697   4615   0.911   35.3
-----
    
```

Level of Service calculations are based on average control delay including geometric delay (HCM criteria), independent of the current delay definition used.

For the criteria, refer to the "Level of Service" topic in the aaSIDRA Output Guide or the Output section of the on-line help.

* Maximum v/c ratio, or critical green periods

--- End of aaSIDRA Output ---