



TRAFFIC IMPACT STUDY

**GELLHAUS LANE RESIDENTIAL DEVELOPMENT
PROPOSED BY WGR DEVELOPMENT AND LDG DEVELOPMENT**

**GELLHAUS LANE
LOUISVILLE, KY**

FINAL REPORT

July 18, 2006

PART 1 – TRAFFIC IMPACT STUDY

SECTION 1 - INTRODUCTION

A new residential development is proposed by WGR Development, LLC (owner) and LDG Development (developer) on approximately 25.6 acres in southern Jefferson County. The subject property is located in the northeastern quadrant of the I-265/Billtown Road interchange. This land is currently zoned for residential use. As part of this development, it is proposed to change the current zoning from R-4 to R-7.

This report will estimate the traffic impacts to the surrounding transportation system and determine if any remedial measures are required in conjunction with the project. The development of the site will be dependant upon market conditions; a three year build-out is predicted for a full build-out of this site. **Figure 1** displays a map of the vicinity.

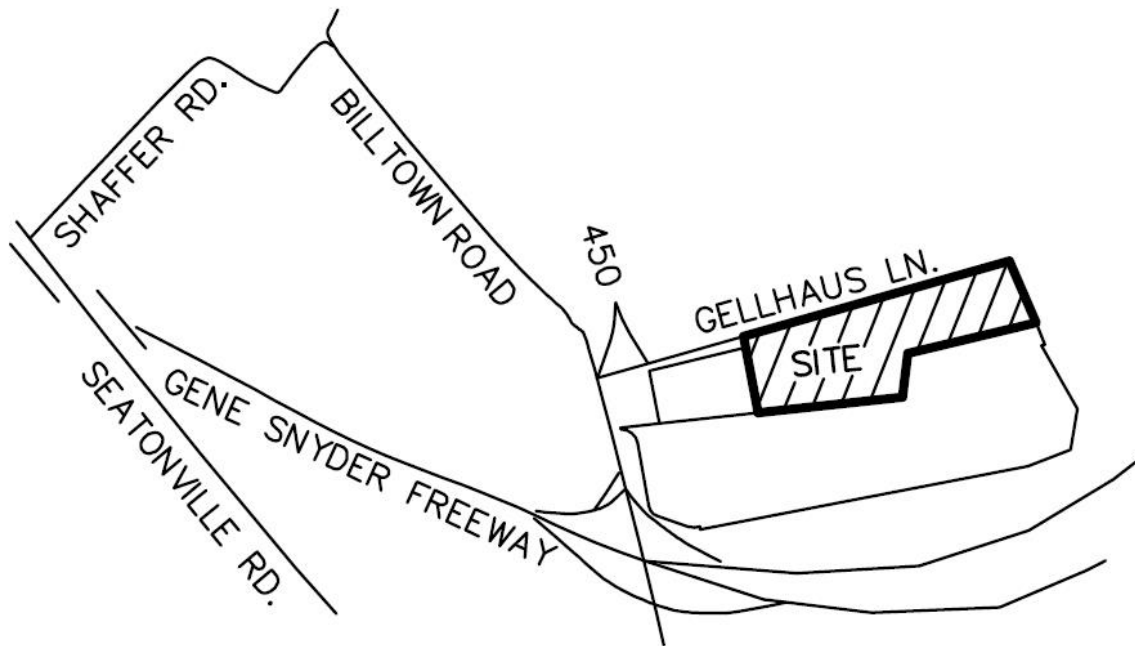


Figure 1. Vicinity Map

SECTION 2 - TRAFFIC DATA COLLECTION AND INVENTORY

Morning and afternoon peak period traffic counts were performed at various intersections in the project area. These counts were manually collected in April and May 2006. A complete list of intersections includes:

- Billtown Road at Shallow Roak Drive
- Billtown Road at Weather Vane Road
- Billtown Road at Gellhaus Lane
- Billtown Road at I-265 Southbound
- Billtown Road at I-265 Northbound
- Gellhaus Lane at Chenoweth Run Road

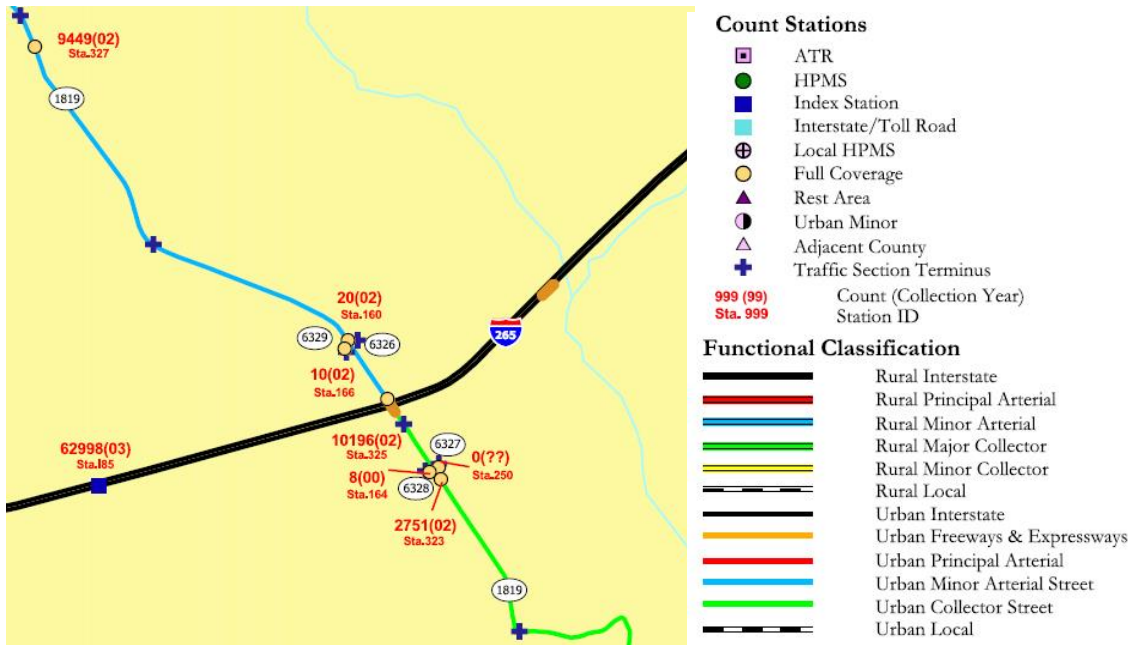
All of the intersections listed above are currently unsignalized intersections. However, at the time of this report a traffic signal was under construction at the intersection of Billtown Road and Gellhaus Lane. This signal is accounted for in the future No-build and Build scenarios.

All of the roadways in the study area are two-lane facilities with the exception of Billtown Road at the I-265 interchange. In the area around the interchange, Billtown Road has a three-lane cross section.

The site is east of Billtown Road and will be accessed via Gellhaus Lane. Two entrances into the development are proposed.

The functional classification and 2002 average daily volumes of all roadways in the study area is presented in **Figure 2**.

The existing traffic volumes that were collected for this study are presented in **Appendix A**.



Source: Kentucky Transportation Cabinet

Figure 2. Functional Classification of Existing and Planned Roadways

There are two TARC routes in the Fern Creek area; however there are no current transit routes in the Billtown Road corridor. A bus route map is presented in **Figure 3**.



Figure 3. Transit Routes in Study Area

The Jefferson County Public School (JCPS) system is proposing an elementary and middle school campus adjacent to this site. The proposed Billtown Elementary and Middle Schools will have an access point between I-265 and Gellhaus Lane. This will be the only access to the school campus.

Data was gathered from JCPS, it was determined that the only a.m. peak hour generator would be the middle school. Its hours of operation will be 7:40 a.m. to 2:20 p.m. and will have a capacity of 950 students. The elementary school hours are much later from 9 a.m. to 3:45 p.m. Therefore, the only part of the school campus that will affect the a.m. rush hour will be middle school. Neither school will have a significant impact on the p.m. rush hour.

The p.m. peak period will be affected by the bus compound on the school campus. Seventy busses will be parked at the site. These busses will leave to begin their routes by 6:00 a.m. and return to the compound around 5 p.m.

Trip generation estimates for the middle school and bus compound were performed and included in both the 2009 No-Build and 2009 Build analyses.

SECTION 3 - PROJECT GENERATED TRAFFIC

TRIP GENERATION

The ITE Trip Generation categories of Apartments and Single Family Detached Housing were used to develop the trip generation estimates for this study. The proposed development plan is presented on the next page in **Figure 4**.

The development plan presents 40 single family homes and 294 multifamily units. The trip generation estimates for the development are presented in **Table 1**.

INSERT 11X17 DEVELOPMENT PLAN

Figure 4. Proposed Development Plan

Table 1. Trip Generation Results

ITE Land Use		Units	AM Equation	PM Equation	AM Trips	PM Trips	
210	Single Family	40	$T = .7x + 9.5$	$\ln(T) = .901\ln(x) + .527$	40	47	
220	Apartments	294	$T = .497x + 3.2$	$T = .541 + 18.7$	150	178	
		Total	344		Total	190	225

PASS BY/DIVERTED TRAFFIC AND INTERNAL CIRCULATION

Due to the residential nature of this development, no pass by trip reductions were applied to the trip generation estimates.

All traffic to this site will be comprised of diverted trips.

The internal road network will be self-contained with no street stubs planned to the adjacent properties. Therefore the internal circulation of the development will be limited to one way in and one way out.

TRIP DISTRIBUTION AND ASSIGNMENT

The existing traffic data was analyzed to determine the distribution of new traffic from the site. The distribution was similar for the morning and afternoon peak periods. It was determined that approximately half of all trips will want to access I-265; about one-third will use Billtown Road to the north; and the remaining 15 to 20 percent will travel toward Chenoweth Run Road. **Figure 5** graphically illustrates the trip distribution used for the analysis. **Figure 6** present the new trip assignments for 2009.

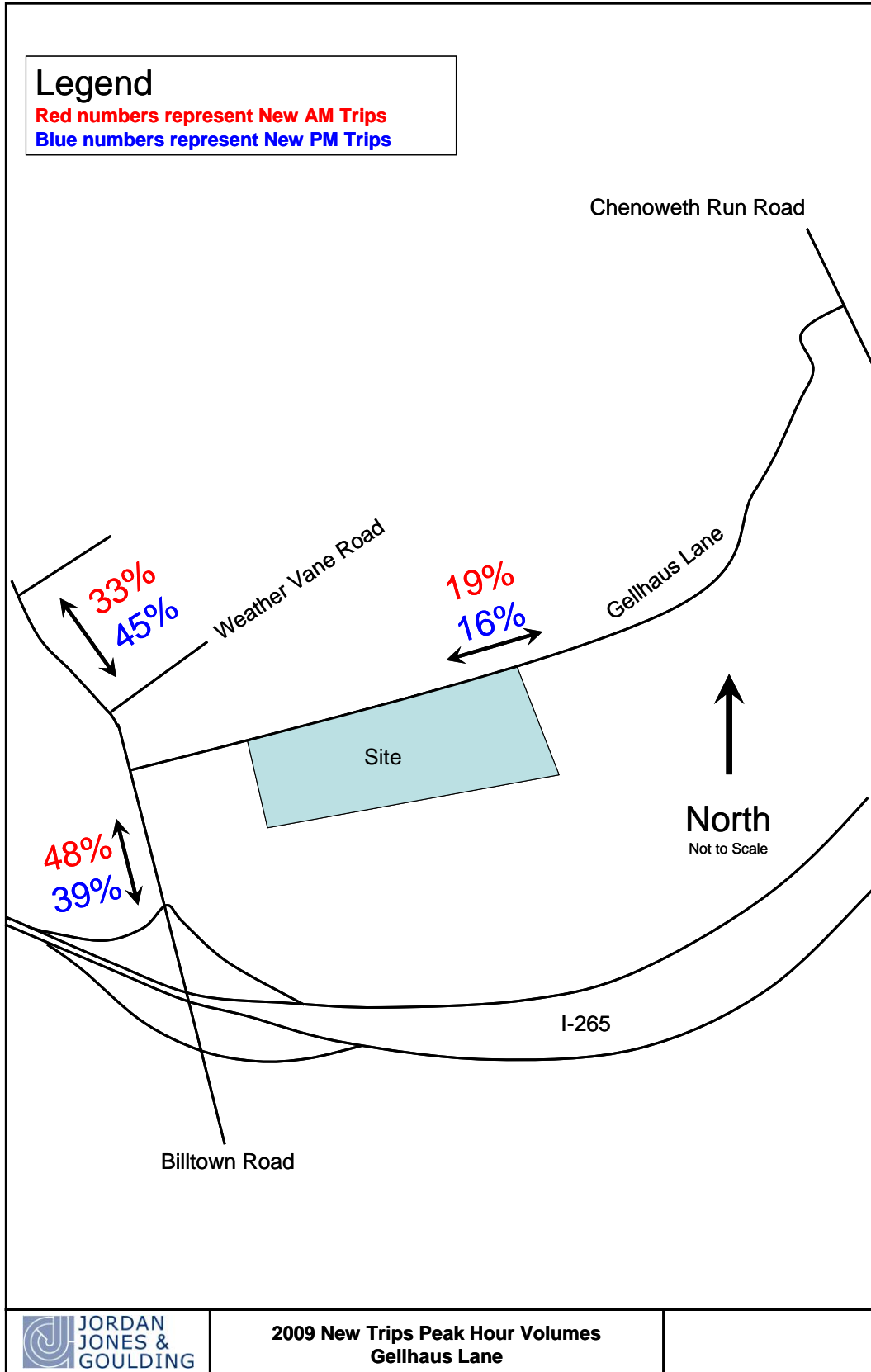


Figure 5. Trip Distribution

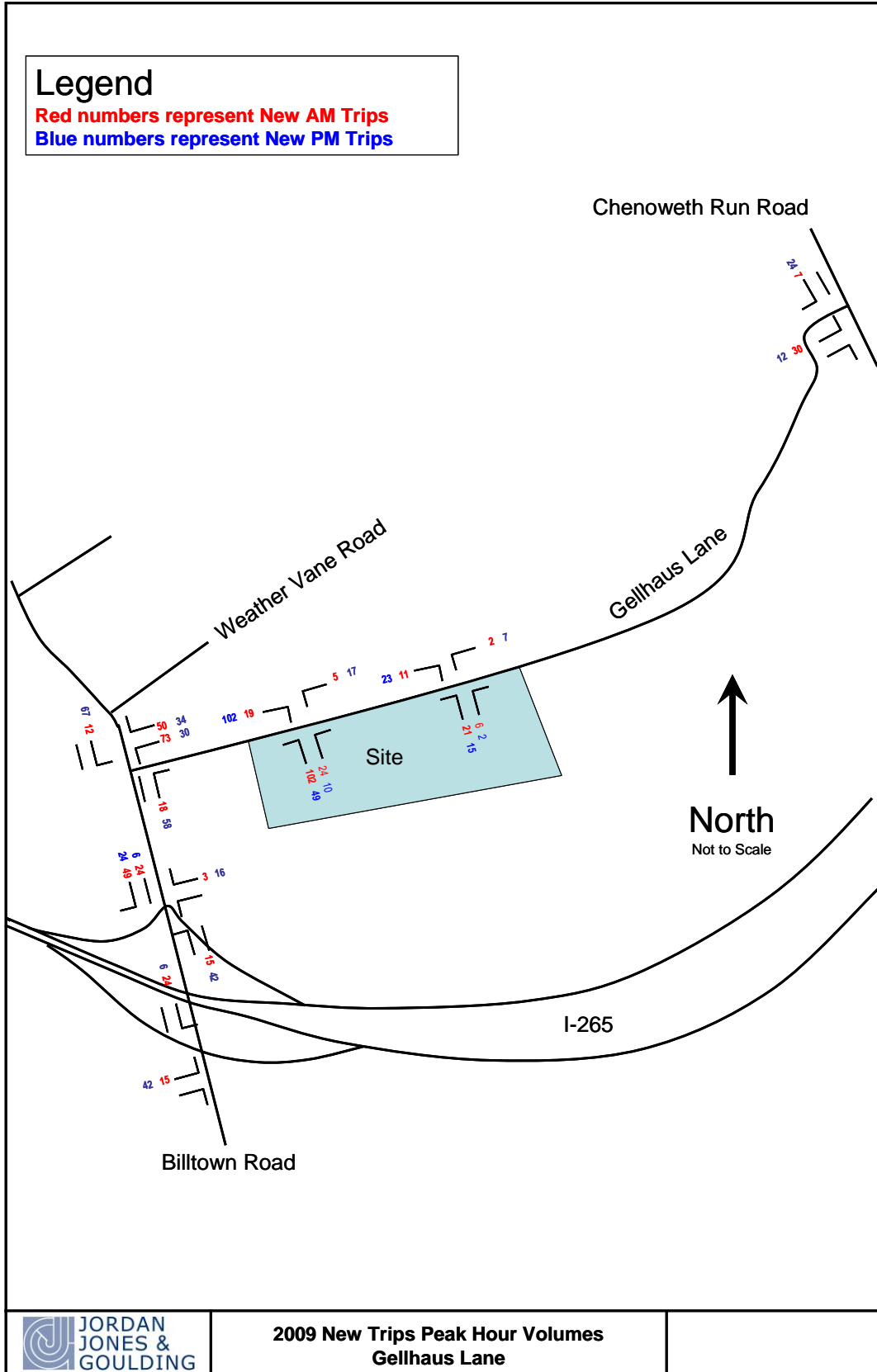


Figure 6. Trip Assignments for 2009

SECTION 4 – TRAFFIC ANALYSIS

FORECAST METHODOLOGY

It was noted from historical traffic data that traffic volumes in the Billtown Road corridor are growing at a rate of 2.5 percent per year (from 1999 to 2005). Using the base volume data for 2006, No-Build traffic data for the future year of 2009 was developed by multiplying 2006 by 2.5 percent per year.

The estimated trips to and from the site were distributed according to the trip distribution diagram and added as another layer of traffic to the No-Build volumes to form traffic volumes for the 2009 Build scenario.

EXISTING LEVEL OF SERVICE

Currently, Billtown Road experiences moderately congested conditions during the AM and PM peak periods. The most congested intersections along Billtown Road are Gellhaus Lane and the I-265 interchange ramps. While Billtown Road itself flows freely, the volume of existing traffic is such that side street delays are high for short periods of time.

To help alleviate this condition, a traffic signal is currently under construction at the intersection of Gellhaus Lane.

FUTURE LEVEL OF SERVICE

The addition of new trips to the study area does not require any additional improvements to the transportation network. In general, a comparison of the No-Build versus the Build scenarios reveals that delays increase slightly at most intersections.

One intersection of note is the I-265 Northbound Ramps. There is a preexisting problem with excessive delays at this intersection. The peak hour problems experienced at this intersection are very similar to those currently experienced at Gellhaus Lane. In time, a traffic signal will be needed at this location to improve operating conditions.

Table 2. AM Peak Period Level of Service Results

Unsignalized Intersections	Existing Conditions	2009 No Build	2009 Future Build
Billtown Rd. & Gellhaus Road	29/D		
I-265 SB Ramp & Billtown Road	18/C	20/C	24/C
I-265 NB Ramp & Billtown Road	611/F	**/F	**/F
Gellhaus North Entrance & Gellhaus Road			12/B
Chenoweth Run Road & Gellhaus Road	10/B	11/B	12/B
Billtown Road & Shallow Roak Drive	23/C	34/D	38/E
Billtown Road & Weather Van Road	18/C	29/D	28/D
Gellhaus South Entrance & Gellhaus Road			14/B
Signalized Intersections			
Billtown Road & Gellhaus Road		11/B	12/B

** Delay cannot be determined by the Highway Capacity Software.

Table 3. PM Peak Period Level of Service Analysis

Unsignalized Intersections	Existing Conditions	2009 No Build	2009 Future Build
Billtown Rd. & Gellhaus Road	226/F		
I-265 SB Ramp & Billtown Road	20/C	24/D	27/D
I-265 NB Ramp & Billtown Road	386/F	561/F	680/F
Gellhaus North Entrance & Gellhaus Road			10/B
Chenoweth Run Road & Gellhaus Road	10/A	10/A	10/A
Billtown Road & Shallow Roak Drive	21/C	25/C	28/D
Billtown Road & Weather Van Road	19/C	34/D	45/E
Gellhaus South Entrance & Gellhaus Road			12/B
Signalized Intersections			
Billtown Road & Gellhaus Road		12/B	14/B

** Delay cannot be determined by the Highway Capacity Software.

MITIGATION MEASURES

The only mitigation measure that is recommended immediately is for the Kentucky Transportation Cabinet to install a traffic signal at the intersection of Billtown Road and the I-265 Northbound Ramps. Excessive delays are incurred by motorists exiting I-265 and pose the risk of traffic queuing traffic onto the interstate. Using Gellhaus Lane as a baseline, it can be concluded by the level of service analysis that a traffic signal is very effective at reducing side street delays.

TRAFFIC IMPACT CONCLUSIONS

The traffic impacts of the proposed Gellhaus Lane residential development will not be significant. Only modest impacts to intersection delays are anticipated.

The only mitigating measure recommend is the installation of a traffic signal at the intersection of Billtown Road and the I-265 Northbound Ramps. There are preexisting problems related to high side street delays today, without the proposed development. It should be noted that the new traffic generated by the proposed development is not what justifies the traffic signal. It is recommended that the KYTC reevaluate this intersection for the purposes of installing a traffic signal under current conditions.

PART 2 – AIR QUALITY ANALYSIS

NOT REQUIRED FOR THIS STUDY

PART 3 – APPENDICES

A – EXISTING TRAFFIC COUNT DATA

B – EXPECTED TRAFFIC COUNT DATA

- 1. FUTURE NO-BUILD**
- 2. FUTURE BUILD**

C – EXISTING CONDITIONS CAPACITY ANALYSIS RESULTS

D – EXPECTED FUTURE CONDITIONS CAPACITY ANALYSIS

- 1. FUTURE NO-BUILD**
- 2. FUTURE WITH PROPOSED DEVELOPMENT**