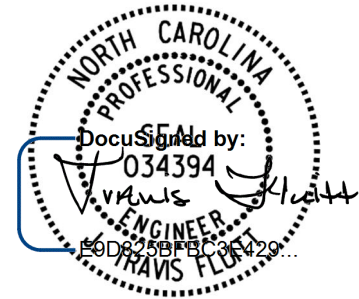


December 14, 2021

Jason Brown
Town of Knightdale
950 Steeple Square Court
Knightdale, NC 27545



12/14/2021

RE: *ParkStone – Trip Generation Comparison*

Kimley-Horn has performed a trip generation analysis for the ParkStone development comparing the trip generation potential of the currently proposed land uses to the trip generation from the *ParkStone TIA* dated August 19, 2016. The land uses analyzed in the TIA included:

- 350 apartments
- 130-room hotel
- 12-screen movie theater
- 212,500 square feet (SF) of general retail space
- 8,000 SF automobile parts sales store
- 2,500 SF fast-food restaurant
- Gas station with 12 fueling positions

The site is now proposed to include:

- 660 apartments (in two complexes of 350 and 310 units)
- 148 townhomes
- 124-room hotel
- 6,600 SF of office space
- 11,500 square feet of retail space
- 8,000 SF automobile parts sales store
- Gas station with 12 fueling positions.

Site trips in the 2016 TIA were generated using ITE Trip Generation 9th Edition rates and equations. The trip generation potential of the new land uses was determined using ITE Trip Generation 11th Edition rates. It should be noted that some land use categories have changed between the 9th and 11th editions. [Table 1](#) below summarizes the trip generation of the currently proposed land uses versus the total trip generation from the TIA. Detailed trip generation calculations for the proposed land uses and from the 2016 TIA are attached.

Table 1 ITE Traffic Generation (Vehicles)									
LUC	Land Use	Intensity		Daily		AM Peak Hour		PM Peak Hour	
				In	Out	In	Out	In	Out
220	Multifamily Housing (Low-Rise)	310	d.u.	1,031	1,031	29	90	97	57
220	Multifamily Housing (Low-Rise)	350	d.u.	1,160	1,160	31	100	108	63
215	Single Family Attached Housing	148	d.u.	539	539	22	49	48	37
310	Hotel	124	rooms	461	461	31	24	33	31
712	Small Office Building	6,600	s.f.	48	48	9	2	5	9
822	Strip Retail Plaza	11,500	s.f.	358	358	19	13	43	43
843	Automobile Parts Sales	8,000	s.f.	221	221	11	9	19	20
945	Gas Station w/ Convenience Market	12	f.p.	1,375	1,375	97	96	111	110
Subtotal				5,193	5,193	249	383	464	370
<i>Internal Capture</i>				817	817	8	8	82	82
<i>Pass-by Capture</i>				715	715	70	71	80	63
Net New External Trips – Proposed Land Uses				3,661	3,661	171	304	302	225
Net New External Trips – 2016 TIA				6,356	6,356	264	285	475	464
Difference (Proposed vs. TIA)				-2,695	-3,358	-93	+19	-173	-239

As shown in Table 1, the proposed land uses are anticipated to generate 5,390 fewer daily trips, 74 fewer total AM peak hour trips, and 412 fewer total PM peak hour trips. While there is a slight increase in outbound AM peak hour traffic, the PM peak hour was the worst case in the TIA, and is more than offset by the substantial reductions in the inbound traffic and in the daily and PM peak hour traffic. It is not expected to have a significant impact to traffic operations on the surrounding roadway network, and, therefore, no additional improvements should be required based on this analysis.

Please contact me at (919) 653-2948 or travis.fluitt@kimley-horn.com should you have questions or comments regarding this analysis.

Sincerely,



Travis Fluitt, P.E.
Senior Project Engineer

cc: Brian Long, Widewaters
Chris Bostic, Kimley-Horn

ParkStone
Trip Generation - Proposed Land Uses

Land Use	Intensity		Daily			AM Peak Hour			PM Peak Hour				
			Total	In	Out	Total	In	Out	Total	In	Out		
220 Multifamily Housing (Low-Rise)	310	d.u.	2,062	1,031	1,031	119	29	90	154	97	57		
220 Multifamily Housing (Low-Rise)	350	d.u.	2,320	1,160	1,160	131	31	100	171	108	63		
215 Single Family Attached Housing	148	d.u.	1,078	539	539	71	22	49	85	48	37		
310 Hotel	124	rooms	922	461	461	55	31	24	64	33	31		
712 Small Office Building	6,600	s.f.	96	48	48	11	9	2	14	5	9		
822 Strip Retail Plaza	11,500	s.f.	716	358	358	32	19	13	86	43	43		
843 Automobile Parts Sales	8,000	s.f.	442	221	221	20	11	9	39	19	20		
945 Gasoline/Service Station with Convenience Market	12	f.p.	2,750	1,375	1,375	193	97	96	221	111	110		
Subtotal			10,386	5,193	5,193	632	249	383	834	464	370		
<i>Internal Capture</i>													
Multifamily Housing (Low-Rise)			264	148	116	2	1	1	26	17	9		
Multifamily Housing (Low-Rise)			297	167	130	2	1	1	28	19	9		
Single Family Attached Housing			137	77	60	0	0	0	15	9	6		
Hotel			127	67	60	3	0	3	13	10	3		
General Office Building			36	23	13	1	0	1	7	5	2		
Shopping Center			141	61	80	1	1	0	19	5	13		
Automobile Parts Sales			88	38	50	1	1	0	9	2	6		
Gasoline/Service Station with Convenience Market			544	236	308	7	5	2	48	14	34		
<i>Internal Capture Total</i>			<i>1,634</i>	<i>817</i>	<i>817</i>	<i>16</i>	<i>8</i>	<i>8</i>	<i>164</i>	<i>82</i>	<i>82</i>		
Total External Trips			8,752	4,376	4,376	616	241	375	670	382	288		
<i>Pass-By Capture</i>													
			<u>AM</u>	<u>PM</u>									
843 Automobile Parts Sales			0%	43%	130	65	65	0	0	0	13	7	6
945 Gasoline/Service Station with Convenience Market			76%	75%	1,300	650	650	141	70	71	130	73	57
<i>Pass-By Capture Total</i>					<i>1,430</i>	<i>715</i>	<i>715</i>	<i>141</i>	<i>70</i>	<i>71</i>	<i>143</i>	<i>80</i>	<i>63</i>
Total Net New External Trips - Proposed			7,322	3,661	3,661	475	171	304	527	302	225		
Total Net New External Trips - From TIA			12,712	6,356	6,356	549	264	285	939	475	464		
Difference - Proposed vs. TIA			-5,390	-2,695	-2,695	-74	-93	19	-412	-173	-239		

Internal Capture Reduction Calculations

Methodology for A.M. Peak Hour and P.M. Peak Hour
based on the *Trip Generation Handbook*, 3rd Edition, published by the Institute of Transportation Engineers

Methodology for Daily
based on the average of the Unconstrained Rates for the A.M. Peak Hour and P.M. Peak Hour

ParkStone

SUMMARY

GROSS TRIP GENERATION

INPUT	Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
		Enter	Exit	Enter	Exit	Enter	Exit
	Office	48	48	9	2	5	9
Retail	1,954	1,954	127	118	173	173	
Restaurant	0	0	0	0	0	0	
Cinema/Entertainment	0	0	0	0	0	0	
Residential	2,730	2,730	82	239	253	157	
Hotel	461	461	31	24	33	31	
	5,193	5,193	249	383	464	370	

INTERNAL TRIPS

OUTPUT	Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
		Enter	Exit	Enter	Exit	Enter	Exit
	Office	23	13	0	1	5	2
Retail	335	438	6	2	22	53	
Restaurant	0	0	0	0	0	0	
Cinema/Entertainment	0	0	0	0	0	0	
Residential	392	306	2	2	45	24	
Hotel	67	60	0	3	10	3	
	817	817	8	8	82	82	
% Reduction		15.7%		2.5%		19.7%	

EXTERNAL TRIPS

OUTPUT	Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
		Enter	Exit	Enter	Exit	Enter	Exit
	Office	25	35	9	1	0	7
Retail	1,619	1,516	121	116	151	120	
Restaurant	0	0	0	0	0	0	
Cinema/Entertainment	0	0	0	0	0	0	
Residential	2,338	2,424	80	237	208	133	
Hotel	394	401	31	21	23	28	
	4,376	4,376	241	375	382	288	