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SANDERSON
A S S O C I A T E S

CONSULTING ENGINEERS

**PROPOSED
RESIDENTIAL DEVELOPMENT
LADYSMITH ROAD
GRIMSBY**

TRANSPORT ASSESSMENT

HIGHWAYS • TRAFFIC • TRANSPORTATION

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TRANSPORT ASSESSMENT

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1. INTRODUCTION

1.1 Sanderson Associates (Consulting Engineers) Limited has been appointed by Capricorn Homes to prepare this Transport Assessment in support of their development proposals for a residential development off Ladysmith Road in Grimsby. The development will comprise of approximately 183 residential dwellings.

1.2 A site location plan is shown in Figure 1 and the relationship to the wider highway network is shown in Figure 2.

1.3 For the purposes of this study the site has been visited, measurements taken, and traffic counts and speed surveys undertaken in the vicinity of the site.

2. EXISTING CONDITIONS

- 2.1 The site is currently vacant. Vehicular access is gained from Ladysmith Road.
- 2.2 The site is located on land to the west of Ladysmith Road. Convamore Road and residential dwellings form the western boundary of the site, whilst Ropery Street, Granville Street form the northern and southern boundaries respectively.
- 2.3 The site is located in area where there is a combination of residential and local business uses.
- 2.4 Ladysmith Road is a single carriageway with provisions for pedestrians via the use of footways to both sides; it is lit by street lighting and is subject to a speed limit of 30mph.
- 2.5 Carriageway and footway widths vary, however approximate dimensions at the existing site access are a 9.2m carriageway width and 2m footway widths. A pedestrian island exists 20m north of the junction with Granville Street, however this does not affect traffic flows along Ladysmith Road.

- 2.6 Ladysmith Road is a designated bus route. There are two nearby bus stops, a southbound stop 20m south of the existing access and a northbound bus stop 100m north of the existing access.
- 2.7 An access into the site is proposed from Ropery Street at the point of an existing access. Ropery Street is a single carriageway with provisions for pedestrians via the use of footways to both sides. Carriageway and footway widths vary, however approximate dimensions at the existing site access are a 7.5m carriageway width with 2m footways to either side. Ropery Street has parking restrictions along its full length in the form of double yellow lines.
- 2.8 Conamore Road is a single carriageway with provisions for pedestrians via the use of footways to both sides. There is an existing cul-de-sac off Conamore Road which may at some time have provided access into the site. Carriageway and footway widths vary, however approximate dimensions at the junction with the cul-de-sac are a 7.2m carriageway width and 2m footway widths.
- 2.9 Conamore Road is subject to one way working north from its junction with Ropery Street; this prohibits vehicles travelling north along Conamore Road from this point. Parking restrictions exist along the eastern side in the form of double yellow lines.

- 2.10 Granville Street links Ladysmith Road with Conyamore Road. It is a single carriageway with provisions for pedestrians via the use of footways to both sides. Carriageway and footway widths vary, however average dimensions are a 7.4m carriageway width and 2m footway widths. Located to the south of Granville Street are some industrial units.
- 2.11 Welholme Junior School is located off Welholme Road approximately 250 metres walking distance west of the development site. Edward Heneage Primary School is located off Edward Street approximately 350 metres walking distance north west of the development site.

Vehicle Speed Survey

- 2.12 Sanderson Associates undertook surveys of actual vehicular speeds on Ladysmith Road and Ropery Street, actual speeds were recorded at 70m each side of the proposed access along Ladysmith Road. All readings were taken in dry weather conditions. Approximately 100 readings in each direction were obtained.
- 2.13 Actual speeds were also recorded at centre of the proposed access along Ropery Street to give a worse case. All readings were taken in dry weather conditions. Approximately 1 hour of readings in each direction were obtained.

2.14 The vehicular speeds obtained excluded vehicle whose speeds were influenced by parked cars or traffic islands and therefore only free flow traffic speeds were recorded.

2.15 The results obtained are summarised below with details being included in Appendix A.

Ladysmith Road	Travelling North (100 Readings)	Travelling South (100 Readings)
Average Speed	28.88 mph	25.71 mph
85 th Percentile Speeds	29.28 mph (47.12 kph)	26.96 mph (43.35 kph)

Ropery Street	Travelling East (73 Readings)	Travelling West (66 Readings)
Average Speed	22.01 mph	24.83 mph
85 th Percentile Speeds	22.50 mph (36.21 kph)	25.90 mph (41.68 kph)

2.16 With reference to the DETR document 'Places, Street and Movement' which provides guidance on the recommended visibility to be achieved at new junctions and accesses the major road distance along Ladysmith Road would be 70m in both directions. The major road distance along Ropery Street would be 70m to the east and 45m to the west.

Manual Traffic Counts

2.17 On Thursday 20th July 2006 Sanderson Associates undertook manual traffic counts from 7:30 to 9:30 and from 16:00 to 18:00 at the junctions surrounding the site.

- 2.18 The junctions included the signalised junction of Durban Road/ Ladysmith Road/ Roper Street, the priority junction of Roper Street/ Convamore Road, the crossroad junction of Convamore Road, Welholme Road, the crossroad junction of Convamore Road/ Granville Street and the priority junction between Ladysmith Road/ Granville Street.
- 2.19 The peak hour traffic flows from the above surveys are shown on Figure 3 with these hours identified as 08:00 to 09:00 and 16:30 to 17:30 for the AM and PM peaks

3. ACCIDENT RECORDS

- 3.1 Details of personal injury accident records occurring in the vicinity of the site over the last five years have been obtained from North East Lincolnshire Council. The data obtained is given in Appendix B and the results are summarised below.
- 3.2 In total 31 accidents have occurred in the last 5 years, of which 27 were classified as slight in severity, 3 serious and 1 fatal.
- 3.3 A total of 9 accidents occurred at the junction with Granville Street and Convamore Road. All of which were classed as slight. Two slight accidents occurred at the junction with Convamore Road and Welholme Road. 3 accidents occurred along Convamore Road one of which was classed as serious. 1 accident occurred at the junction with Convamore Road and Ropery Street.
- 3.4 A total of 9 accidents occurred at or around the signalised junction between Ladysmith Road/ Ropery Street and Durban Road, 2 of which were classed as serious. 1 accident occurred at the junction with Ladysmith Road and Cooper Road and one with Ladysmith Road and Columbia Road. The remaining 5 accidents occurred at the junction

between Ladysmith Road and Granville Street one of which was classed as fatal.

3.5 The number, type and severity of the accidents which have occurred are not uncommon at priority junctions and signalised junctions. There are no significant clusters or trends that could be considered to be a cause for concern.

3.6 Based on the above and the level of development proposed, it is considered that there will be no detrimental affect on existing highway safety or potential increase in accidents.

4. DEVELOPMENT PROPOSALS

4.1 The proposed development comprises approximately 183 residential dwellings, as shown on the Architect's plan.

4.2 Access to the development will be gained from three accesses; one access will be from Ropery Street, another from Convamore Road which will link up to the third access onto Ladysmith Road. There will also be direct frontage access onto Ladysmith Road, Ropery Street and Granville Street.

5. TRAFFIC GENERATION AND DISTRIBUTION

Traffic Generation

5.1 The TRICS database version 2006 (a) has been interrogated to obtain typical trip rates for the proposed site. The land use category Residential-Houses Privately Owned has been used to obtain 85th percentile trip rates for the weekday morning and evening peak hours. It is considered that this land-use category accurately reflects the development description.

5.2 The 85th percentile weekday trip rates for departures/arrivals as indicated above are shown in the table below together with the resultant traffic generated by 163 dwellings.

Private Hours	85th Percentile Trip Rate			Traffic Generation		
	A	B	T	A	B	T
Mon- Fri 0800-0900	0.29	0.57	0.82	53	104	150
Mon- Fri 17:00-18:00	0.56	0.40	0.89	102	73	163

5.3 Therefore the proposed development will generate a total of 150 and 163 vehicles in the am and pm peak hours respectively.

5.4 Whilst the site is currently vacant it does have an existing industrial use and therefore its redevelopment for residential purposes has the potential to reduce the number of HGV movements in the vicinity of the site which could occur with any redevelopment for industrial use.

Traffic Distribution

- 5.5 For the purposes of assessment, it has been assumed that 50% of the generated traffic from the central part of the site accessing on to the link road through the site would travel east out of the site on to Ladysmith Road and the remaining 50% would travel west on to Convamore Road.
- 5.6 Distribution on to the highway network has then been based on directional flows and existing turning proportions.
- 5.7 Traffic from other areas of the site will also enter the highway network via Granville Street and Ropery Street and again this is distributed base on directional flows and existing turning proportions.

6. TRAFFIC IMPACT

3.1 As agreed with North East Lincolnshire Council, five junctions within the vicinity of the site have been analysed as part of this Transport Assessment. The five junctions are listed below:

- Granville Street/ Ladysmith Road Junction.
- Granville Street/ Convamore Road Junction.
- Welholme Road/ Convamore Road Junction.
- Ladysmith Road/ Proposed Site Access Junction
- Roper Street/ Durban Road/ Ladysmith Road Traffic Signal Junction.

8.2 These junctions comprise four major/minor priority junctions and one traffic signal controlled junction. The computer programs, PICADY 4.1 and LINSIG, have been used to model the junctions in order to assess the capacity, queuing and delay experienced at the respective junctions.

6.3 NRTF 1997 factors have been used to growth the base traffic to the proposed Opening Year of 2010. A central growth factor of 1.063 has been used for growth. The growth rates are included in Appendix D. The base traffic flows in the Opening Year for highway peak periods can be seen in the figures at the rear of this report.

6.4 In order to ascertain the level of impact the proposed development will have at the proposed site access and beyond, the above junctions have been assessed assuming the 2010 base highway flows combined with those flows as generated by the proposed development.

6.5 PICADY and LINSIG assess the capacity, queuing and delay experienced at major/minor junctions, and traffic signal junctions respectively. Details of the results from the models are contained in Appendix E and F respectively. A summary of the results for the junctions assessed using PICADY can be seen below:

Ladysmith Road / Granville Street

Arm A = Ladysmith Road (South)

Arm B = Granville Street

Arm C = Ladysmith Road (North)

Movement	Am Peak 08:00-09:00		Pm Peak 16:30-17:30	
	Max RFC	Max Queue	Max RFC	Max Queue
B-AC	0.344	0.5	0.399	0.7
C-B	0.279	0.4	0.181	0.2

Table 6.1: PICADY Results
Ladysmith Road / Granville Street, 2010 Network Flows + Development Flows.

Granville Street / Convamore Road

Arm A = Granville Street (East)

Arm B = Convamore Road (South)

Arm C = Granville Street (West)

Arm D = Convamore Road (North)

Movement	Am. Peak 08:00-09:00		Pm. Peak 16:30-17:30	
	Max RFC	Max Queue	Max RFC	Max Queue
B-ACD	0.084	0.1	0.024	0.0
A-BCD	0.201	0.3	0.029	0.0
D-ABC	0.169	0.2	0.204	0.3
C-ABD	0.006	0.0	0.013	0.0

Table 6.2: PICADY Results
Granville Street/ Convamore Road 2010 Network Flows + Development Flows.

Convamore Road / Welholme Road

Arm A = Convamore Road (South)

Arm B = Welholme Road (West)

Arm C = Convamore Road (North)

Arm E = Welholme Road (East)

Movement	Am. Peak 08:00-09:00		Pm. Peak 16:30-17:30	
	Max RFC	Max Queue	Max RFC	Max Queue
B-ACD	0.318	0.5	0.374	0.6
A-BCD	0.000	0.0	0.000	0.0
D-ABC	0.077	0.1	0.049	0.1
C-ABD	0.263	0.4	0.207	0.3

Table 6.3: PICADY Results
Convamore Road/ Welholme Road 2010 Network Flows + Development Flows.

Ladysmith Road / Site Access

Arm A = Ladysmith Road (South)

Arm B = Site Access

Arm C = Ladysmith Road (North)

Movement	Am Peak 08:00-09:00		Pm Peak 16:30-17:30	
	Max RFC	Max Queue	Max RFC	Max Queue
B-AC	0.075	0.1	0.063	0.1
C-AB	0.028	0.0	0.069	0.1

Table 6.4: PICADY Results

Ladysmith Road/ Site Access 2010 Network Flows + Development Flows.

- 6.6 Therefore from the above tables it can be seen that there are no adverse queuing or capacity problems at all four junctions given that the ratio of flow to capacity (RFC) is well below 0.85. Sufficient spare capacity is available within all junctions.
- 6.7 The results show that even allowing for an absolute worst case scenario assuming all development traffic will be new to the network and without the subtraction of the potential traffic which could be generated by the existing land; there is negligible impact at the site access junction.
- 6.8 The traffic signal junction of Ladysmith Road/ Durban Road/ Ropery Street has been modelled using the signal control data provided by North East

Lincolnshire Council. The traffic signal controller runs on four stages including a quiescent all red stage.

6.9 For the purposes of the signal capacity assessment it has been considered that during peak hour periods (i.e. 08:00 – 09:00 and 16:30 – 17:30) the quiescent all red stage should not be modelled. The signalised junction runs on the MOVA signal control system and a cycle time of 70 seconds has been assumed for this peak hour assessment. A summary of the LINSIG results is given in the table below:

Assessment Scenario	Cycle Time (s)	PRC %	Delay (PCUh)
AM Peak 2010 + Development	70	10	11.1
PM Peak 2010 + Development	70	17	11.3

6.7: Ladysmith Road/ Durban Road/ Ropery Street – LINSIG Results.

6.10 From above table it can be seen that the signalised junction will operate with a positive PRC of 10% in the AM peak hour and 17% in the PM peak hour which means the junction will operate satisfactorily in the both peak periods.

6.11 In conclusion, it is considered that the development could be accommodated on the local highway network, as no capacity problems are identified at any of the junctions in the vicinity of the site and there is no material impact on the wider highway network.

7. PUBLIC TRANSPORT

Buses

- 7.1 The site is located close to a number of bus stops along Ladysmith Road with a southbound bus stop located 20m south of the proposed access road and a northbound bus stop is 100m north of the proposed access Road.
- 7.2 The number 7 service is the only bus to operate along Ladysmith Road along the site frontage. This service provides up to 2 buses an hour at peak periods along Ladysmith Road.
- 7.3 Bus stops are also located along Durban Road. The bus services along Durban Road are the 4 and 20 services. These services provide up to 4 buses an hour at peak periods along Durban Road.
- 7.4 Details of bus services and routes are tabulated below with a bus map indicating the bus services operating in the area contained in Appendix G.

Service	Route Two Way (Ladysmith Road)	Mon to Sat Daytime	Evening Sun & Bank Holidays
7	Grange Estate, Laceby Rd, Bargate, Deansgate, Bus Station, EllisWay, Ladysmith Rd, Lovelane Corner, Windsor Rd, Sandringham Rd, Brian Avenue, Middle Thorpe Road, Taylors Avenue, Humberston Rd, North Sea Lane, Pleasure Island	30 min	No Service
4	Bradley, Broadway, Laceby Acres, Little Coates Rd, Yarborough Rd, Cromwell Rd, Dudley St Bus Station, Ellis Way, Durban Rd, Carr Lane, Davenport Drive, Sandringham Rd, Highgate, Cleethorpes Pier	15 min	60 min
20	Cleethorpes Pier, Grimsby Rd, Blundell Park, Park St, Durban Rd, Ellis Way, Bus Station, Victoria St, Corporation Rd, Pyewipe Rd, A180, Europarc	No Service	Evening Only, 2 Hours

Trains

7.5 Grimsby Town Railway Station is located approximately 1.8 km from the site. The railway station is therefore within an acceptable cycling distance of the site and can also be accessed by existing bus services provided. Destinations such as Cleethorpes, Sheffield, Manchester Airport and Lincoln can be accessed.

7.6 From the above bus and train services it is considered that the site is set within an area that is well served by public transport, with a number of local areas being served.

Cycling

7.7 Cycling facilities are provided within the local area. Cycle routes within the Grimsby area are contained in Appendix H.

- 7.8 Cycling would offer a viable alternative mode of travel to and from the site for commuters travelling from the local area.

Pedestrians

- 7.9 2m wide pedestrian footways and links are to be provided within the site that will allow pedestrians to access to all dwellings. Dropped crossings are to be provided within the site where pedestrians need to cross the internal access roads.

- 7.10 All roads surrounding the site have footways and are lit by street lighting. A pedestrian island is located just south of the proposed access along Ladysmith Road, which will allow safer crossing to nearby local amenities.

- 7.11 In conclusion, the existing pedestrian provisions within the vicinity of the site are considered to be adequate to serve the development and would offer a viable alternative to the car for people living within the development.

8. CONCLUSIONS

7.1 The development proposals comprise the development of approximately 183 residential dwellings. Access to the development will be gained from three accesses; one access will be from Ropery Street, another from Convamore Road which will link up to the third access onto Ladysmith Road. There will also be direct frontage access onto Ladysmith Road, Ropery Street and Granville Street.

7.2 Whilst there have been 31 accidents in the vicinity of the site it is considered that the generated traffic from the development will have no detrimental effect on the level of potential accidents.

7.3 It is considered that appropriate trip rates have been used to determine the traffic generation for the proposed residential use.

7.4 A robust assessment has been carried for the possible traffic impact of the development and this has shown there to be no capacity issues at any of the site accesses or any of the nearby junctions.

7.5 Adequate pedestrian facilities exist on the local highway network and pedestrian routes are to be provided within the site.

- 7.6 It is considered that the development site, offers a high degree of sustainability with high levels of public transport and amenities within walking and cycling distance.
- 7.7 No highway problems have been identified that would preclude the development and there does not appear to be any highway reasons why planning permission should not be approved at the site.