

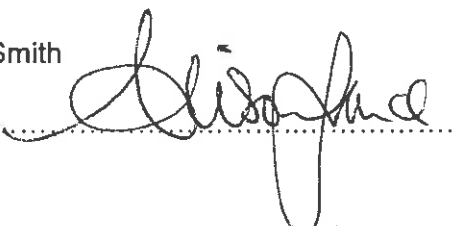
**PROPOSED MIXED USE  
DEVELOPMENT  
EDGE LANE, LIVERPOOL**

**TRANSPORT ASSESSMENT  
VOLUME ONE**

Ref: 5796/KS/003/03

Report prepared by Karen Smith

Checked and approved by .....



September 2010

Date Sept 2010

Date 30th September 2010

Director  
A J France IEng FIHE AMICE MCIT

Associate Directors  
P Maurice BEng (Hons) CEng MICE  
R Greenwood IEng FIHE  
D Colley BEng MCIT  
J McKellar GradIHE

VAT No GB-873219218  
Company No 3235830  
Registered Office  
Sanderson House, Jubilee Way  
Grange Moor WF4 4TD



**PROPOSED MIXED USE  
DEVELOPMENT  
EDGE LANE, LIVERPOOL**

**TRANSPORT ASSESSMENT**

**CONTENTS**

<b>1. INTRODUCTION</b>	<b>6</b>
<b>2. EXISTING SITUATION</b>	<b>7</b>
2.1 The Site and Surrounds	7
2.2 Highway Network	7
<b>3. PERSONAL INJURY ACCIDENT DATA</b>	<b>9</b>
3.1 Overview	9
3.2 Area 1 Edge Lane / Milton Road Junction to Montrose Way	9
3.3 Area 2 Edge Lane / Montrose Way Junction to Rathbone Road	10
3.4 Area 3 Edge Lane / Rathbone Road Junction	11
3.5 Area 4 Rathbone Road between Borax Street and Binns Road	12
3.6 Area 5 Edge Lane / Mill Lane Junction and Mill Lane	12
3.7 Conclusion	13
<b>4. SUSTAINABLE TRANSPORT</b>	<b>14</b>
4.1 Bus Services	14
4.2 Train Services	18
4.3 Walking	19
4.4 Cycling	20
4.5 Minimum Accessibility Standard Assessment (MASA)	20
4.6 Travel Plan	21
4.7 Conclusions on Sustainable Transport	21
<b>5. PROPOSED DEVELOPMENT</b>	<b>22</b>
5.1 Development Proposals	22
5.2 Access	22
5.3 Parking	24
5.4 Servicing	27

<b>6.</b>	<b>TRAFFIC IMPACT ASSESSMENT</b>	<b>30</b>
6.1	Traffic Surveys	30
6.2	Trip Generations	31
6.3	Traffic Distribution, Growth & Generation	32
6.4	Junction Modelling	35
6.5	Summary and Conclusions	47
<b>7.</b>	<b>CONCLUSIONS</b>	<b>48</b>

## **FIGURES**

<b>1</b>	<b>SITE LOCATION PLAN</b>
<b>2</b>	<b>BUS STOP LOCATION PLAN</b>
<b>3</b>	<b>TRAIN STATION LOCATION PLAN</b>
<b>4</b>	<b>WALKING PLAN</b>
<b>5</b>	<b>CYCLING PLAN</b>
<b>6</b>	<b>AM PEAK EXISTING TRAFFIC FLOWS (PCU's)</b>
<b>7</b>	<b>PM PEAK EXISTING TRAFFIC FLOWS (PCU's)</b>
<b>8</b>	<b>SAT PEAK EXISTING TRAFFIC FLOWS (PCU's)</b>
<b>9</b>	<b>AM PEAK 2010 (PCU's)</b>
<b>10</b>	<b>PM PEAK 2010 (PCU's)</b>
<b>11</b>	<b>SAT PEAK 2010 (PCU's)</b>
<b>12</b>	<b>AM PEAK MONTROSE WAY LINK REDISTRIBUTED 2010 (PCU's)</b>
<b>13</b>	<b>PM PEAK MONTROSE WAY LINK REDISTRIBUTED 2010 (PCU's)</b>
<b>14</b>	<b>SAT PEAK MONTROSE WAY LINK REDISTRIBUTED 2010 (PCU's)</b>
<b>15</b>	<b>AM PEAK BINNS ROAD REDISTRIBUTED 2010 (PCU's)</b>
<b>16</b>	<b>PM PEAK BINNS ROAD REDISTRIBUTED 2010 (PCU's)</b>
<b>17</b>	<b>SAT PEAK BINNS ROAD REDISTRIBUTED 2010 (PCU's)</b>
<b>18</b>	<b>AM BASE 2010 (PCU's)</b>
<b>19</b>	<b>PM BASE 2010 (PCU's)</b>
<b>20</b>	<b>SAT BASE 2010 (PCU's)</b>
<b>21</b>	<b>AM BASE 2020 (PCU's)</b>
<b>22</b>	<b>PM BASE 2020 (PCU's)</b>
<b>23</b>	<b>SAT BASE 2020 (PCU's)</b>
<b>24</b>	<b>AM PRIMARY DISTRIBUTION</b>
<b>25</b>	<b>PM PRIMARY DISTRIBUTION</b>
<b>26</b>	<b>SAT PRIMARY DISTRIBUTION</b>
<b>27</b>	<b>AM MONTROSE WAY ACCESS DISTRIBUTIONS</b>
<b>28</b>	<b>AM RATHBONE ROAD ACCESS DISTRIBUTIONS</b>
<b>29</b>	<b>AM MILTON ROAD ACCESS DISTRIBUTIONS</b>

30	AM CRAWFORD WAY ACCESS DISTRIBUTIONS
31	AM INDUSTRIAL DISTRIBUTIONS
32	AM HOSPITAL DISTRIBUTIONS
33	PM MONTROSE WAY ACCESS DISTRIBUTIONS
34	PM RATHBONE ROAD ACCESS DISTRIBUTIONS
35	PM MILTON ROAD ACCESS DISTRIBUTIONS
36	PM CRAWFORD WAY ACCESS DISTRIBUTIONS
37	PM INDUSTRIAL DISTRIBUTIONS
38	PM HOSPITAL DISTRIBUTIONS
39	SAT MONTROSE WAY ACCESS DISTRIBUTIONS
40	SAT RATHBONE ROAD ACCESS DISTRIBUTIONS
41	SAT MILTON ROAD ACCESS DISTRIBUTIONS
42	SAT CRAWFORD WAY ACCESS DISTRIBUTIONS
43	SAT INDUSTRIAL DISTRIBUTIONS
44	SAT HOSPITAL DISTRIBUTIONS
45	MONTROSE WAY PROPOSED FLOWS (40%) AM PEAK
46	RATHBONE ROAD PROPOSED FLOWS (15%) AM PEAK
47	MILTON ROAD ACCESS PROPOSED FLOWS (15%) AM PEAK (PCU's)
48	CRAWFORD WAY ACCESS PROPOSED FLOWS (30%) AM PEAK (PCU's)
49	AM INDUSTRIAL PROPOSED FLOWS
50	AM HOSPITAL PROPOSED FLOWS
51	PM MONTROSE WAY ACCESS PROPOSED FLOWS
52	PM RATHBONE ROAD ACCESS PROPOSED FLOWS
53	PM MILTON ROAD ACCESS PROPOSED FLOWS
54	PM CRAWFORD WAY ACCESS PROPOSED FLOWS
55	PM INDUSTRIAL PROPOSED FLOWS
56	PM HOSPITAL PROPOSED FLOWS
57	SAT MONTROSE WAY ACCESS PROPOSED FLOWS
58	SAT RATHBONE ROAD ACCESS PROPOSED FLOWS
59	SAT MILTON ROAD ACCESS PROPOSED FLOWS
60	SAT CRAWFORD WAY ACCESS PROPOSED FLOWS
61	SAT INDUSTRIAL PROPOSED FLOWS
62	SAT HOSPITAL PROPOSED FLOWS
63	AM PROPOSED TRAFFIC GENERATION
64	PM PROPOSED TRAFFIC GENERATION
65	SAT PROPOSED TRAFFIC GENERATION
66	AM BASE 2010 + PROPOSED

- 67 PM BASE 2010 + PROPOSED
- 68 SAT BASE 2010 + PROPOSED
- 69 AM BASE 2020 + PROPOSED
- 70 PM BASE 2020 + PROPOSED
- 71 SAT BASE 2020 + PROPOSED

#### **APPENDICES**

- A PERSONAL INJURY ACCIDENT DATA
- B MASA
- C TRICS OUTPUTS
- D TRANSYT DATA

#### **DRAWINGS**

- |                    |   |
|--------------------|---|
| 5796/005           | RATHBONE ROAD/EDGE LANE PROPOSED ALIGNMENT  |
| 5796/006           | MILTON ROAD/EDGE LANE PROPOSED ALIGNMENT  |
| 5796/007           | MONTROSE WAY/EDGE LANE PROPOSED ALIGNMENT   |
| 5796/SK010 REV A   | A3 UNITS SWEPT PATH ANALYSIS OF A FTA 10M RIGID VEHICLE   |
| 5796/SK011 REV A   | UNITS 38 AND 39 SWEPT PATH ANALYSIS OF A 4.6T LIGHT VAN   |
| 5796/SK014         | UNDERCROFT SERVICING TO UNITS 26-32 EXIT SWEPT PATH ANALYSIS OF A FTA DESIGN ARTICUALTED VEHICLE  |
| 5796/SK015         | UNDERCROFT SERVICING TO UNITS 26-32 ENTRY SWEPT PATH ANALYSIS OF A FTA DESIGN ARTICULATED VEHICLE |
| 5796/SK016         | UNITS 1-20 SWEPT PATH ANALYSIS OF A FTA DESIGN ARTICULATED VEHICLE                                |
| 5796/SK017         | UNITS 33 TO 37 SWEPT PATH ANALYSIS OF FTA DESIGN ARTICULATED VEHICLE                              |
| 5796/SK018         | UNITS 47 AND 42 TO 44 SWEPT PATH ANALYSIS OF A FTA DESIGN ARTICULATED VEHICLE                     |
| 5796/SK019         | UNIT 45 SWEPT PATH ANALYSIS OF A 7.5T PANEL VAN   |
| 5796/SK020         | UNITS 22 TO 25 SWEPT PATH ANALYSIS OF A FTA DESIGN ARTICULATED VEHICLE                            |
| M3458 P3-101 REV B | SITE LAYOUT PREPARED BY AEW ARCHITECTS  |

## **1. INTRODUCTION**

- 1.1 Sanderson Associates (Consulting Engineers) Limited has been appointed by Derwent Holdings Ltd to produce a Transport Assessment in support of a planning application for the redevelopment of the Edge Lane Retail Park, Liverpool. The location of the site is shown on the plan attached at **Figure 1**.
- 1.2 This report will consider in detail:
- the local highway network
  - road accident statistics
  - the accessibility of the site in relation to sustainable transport
  - the likely traffic movements from the development proposal
  - the impact of the development on the local highway network
- 1.3 A meeting was held with officers of Liverpool City Council on Monday 18<sup>th</sup> May 2009 when the principle of a Transport Assessment was discussed.
- 1.4 For the purposes of this study the site has been visited, measurements have been taken as well as observations made of existing traffic and pedestrian movements together with a vehicle and pedestrian traffic survey.
- 1.5 A Travel Plan is submitted in support of the planning application which sets out measures designed to encourage sustainable travel at the development site. This document should therefore be read in conjunction with that report.

## **2. EXISTING SITUATION**

### **2.1 *The Site and Surrounds***

- 2.1.1 The site lies approximately 3.6 km to the east of Liverpool City Centre.
- 2.1.2 The current retail park comprises of a variety of retail and food units as well as a gym, bowling centre and cinema. The site is bounded by residential development to the north and industrial units to the south. At the corner of Rathbone Road and Edge Lane there is a park area which includes surfaced ball games areas and a skateboard area.
- 2.1.3 The current main access to the site is from Montrose Way via a signalised junction. Access is also available from Binns Road to the south of the retail park.
- 2.1.4 The general location of the site is illustrated in **Figure 1** at the rear of this report.

### **2.2 *Highway Network***

- 2.2.1 Edge Lane is classified as the A5047 west of the Rathbone Road junction. East of this junction up to the M62, it is classified as the A5080.
- 2.2.2 Edge Lane is a continuation of the M62 motorway and whilst it does change its name, it provides one of the main links from the M62 into Liverpool City Centre from the east.
- 2.2.3 It is dual carriageway standard but does widen to three lanes eastbound in the vicinity of the Rathbone Road junction.
- 2.2.4 In the vicinity of the development, Edge Lane forms signalised junctions with Mill Lane, Rathbone Road and the Edge Lane Retail Park at Montrose Way.
- 2.2.5 There are numerous side roads on Edge Lane which provide a left out / left in movement only. However, at some junctions there are gaps in the central reserve to allow an 'all movements' priority junction. The central reserves at some of these junctions have recently been closed as part of the Edge Lane Redevelopment Scheme.

- 2.2.6 Street lighting and footways are provided on both sides of Edge Lane, with full pedestrian movements provided at the signalised junctions.
- 2.2.7 St Oswald's Street is classified as the A5047 and runs from Edge Lane in the south to Old Swan in the north.
- 2.2.8 Rathbone Road is classified as the B5179 and continues from the Edge Lane / St Oswald's Street junction in the north to Wavertree and Sefton Park in the south.
- 2.2.9 It has street lighting and footways to both sides with numerous side roads forming simple priority junctions.
- 2.2.10 Rathbone Road forms a roundabout junction with Wavertree Avenue and Pighue Lane. Pighue Lane westbound can only be entered from Rathbone Road, and does not form an exit onto the roundabout. Pighue Lane (west) and Wavertree Lane form a link into the Edge Lane retail site and adjacent industrial areas.
- 2.2.11 The Edge Lane Retail Park access forms a signalised junction with Edge Lane and an access into a retail park opposite.
- 2.2.12 The retail access road (Montrose Way) forms a link back onto Edge Lane further west, along Binns Road via a simple priority junction. This route is signed as an alternative access onto Edge Lane Retail Park.
- 2.2.13 Rat-running between Mill Lane and Rathbone Road in the south via this route has been discouraged by physical road closures on Binns Road in the vicinity of Garnet Street.
- 2.2.14 Montrose Way is single carriageway but widens and includes a left turn flare at the Edge Lane junction.



### 3. PERSONAL INJURY ACCIDENT DATA

#### 3.1 Overview

3.1.1 Accident data was obtained from Liverpool City Council, covering the period of 1<sup>st</sup> December 2003 – 30<sup>th</sup> November 2008. The area of interest covers the junction of Edge Lane / Milton Road and along Edge Lane to the junction of Edge Lane / Mill Lane including Rathbone Road and Mill Lane. The study area with an accident plot for each junction can be seen in **Appendix A**.

3.1.2 The total number of accidents reported in the five year period is 102. The severity of the accidents is 13 Serious and 89 Slight.

3.1.3 As an aid to identification and assessment the accidents have been grouped into the following areas:

#### 3.2 Area 1 Edge Lane / Milton Road Junction to Montrose Way

3.2.1 The accident record for this junction is shown in the following table:

	2003		2004		2005		2006		2007		2008		Total
	SL	SE	SL	SE	SL	SE	SL	SE	SL	SE	SL	SE	
Rear Shunt			1		1		4						6
Pedestrian	1					1			1				3
Driver Error													0
Right Turn							1						1
Loss of Control			1		1								2
Lane Change			3		2								5
U-Turn Manoeuvre			1										1
Total	1	0	6	0	4	1	5	0	0	1	0	0	18

3.2.2 It should be noted that a high proportion of the accidents are of the 'lane change' and 'rear shunt' type. The 2 serious collisions that occurred both involved pedestrians as detailed below.

3.2.3 Accident ref EE1671907 occurred on 16<sup>th</sup> April 2007 at 16:00 on a dry road surface in light conditions. The accident involved a pedestrian stepping out into the carriageway crossing against the traffic lights and colliding with a vehicle. From the contributory factors the pedestrian failed to look properly and incorrectly used the pedestrian crossing facility.

- 3.2.4 Accident ref EE0228405 occurred on 24<sup>th</sup> October 2005 at 12:30 on a wet road surface in light conditions. The accident involved two pedestrians crossing the road masked from the near side view of the driver and a collision occurred between the vehicle and pedestrians.

### 3.3 **Area 2 Edge Lane / Montrose Way Junction to Rathbone Road**

- 3.3.1 The accident record for this junction is shown in the following table:

	2003		2004		2005		2006		2007		2008		Total
	SL	SE	SL	SE	SL	SE	SL	SE	SL	SE	SL	SE	
Rear Shunt			3	2			2		1				8
Pedestrian						2	2	1					5
Driver Error							1		1				2
Right Turn											1		1
Loss of Control													0
Lane Change							1						1
U-Turn Manoeuvre											1		1
Total	0	0	3	2	0	2	6	1	2	0	2	0	18

- 3.3.2 Again, the majority of the accidents are of the 'rear shunt' type. 1 collision occurred as a result of right turn manoeuvre and 5 of the accidents involved pedestrians. 5 of these accidents were serious in severity and are detailed below.
- 3.3.3 Accident ref ET0155405 occurred on 8<sup>th</sup> July 2005 at 23.20 on a dry road surface in dark street lit conditions. The accident involved a pedestrian stepping out into the carriageway and colliding with a vehicle. From the contributory factors the pedestrian failed to look properly.
- 3.3.4 Accident ref EE0177605 occurred on 18<sup>th</sup> September 2005 at 14:50 on a dry road surface in light conditions. The accident involved a pedestrian colliding with a vehicle whilst crossing to the central island. From the contributory factors the pedestrian failed to look properly and failed to judge the vehicle's path and / or speed.
- 3.3.5 Accident ref ET0086304 occurred on 17<sup>th</sup> April 2004 at 23:00 on a dry road surface in dark street lit conditions. The accident involved a vehicle colliding with rear of another vehicle waiting to turn right.

3.3.6 Accident ref ET0268004 occurred on 6<sup>th</sup> November 2004 at 17:40 on a wet road surface in dark street lit conditions. The accident involved vehicle 1 braking to turn right and being hit in the rear by vehicle 2. Vehicle 3 stops but vehicle 5 shunts vehicle 4 into vehicle 3 and vehicle 3 into vehicle 2.

3.3.7 Accident ref EE1205406 occurred on 13<sup>th</sup> October 2006 at 22:29 on a dry road surface in dark street lit conditions. The accident involved a vehicle changing lanes as two pedestrians ran out from the central reservation, the driver avoided the first pedestrian but collided with second. From the contributory factors there was a temporary road layout and the pedestrian failed to judge vehicle's path and / or speed.

### 3.4 **Area 3 Edge Lane / Rathbone Road Junction**

3.4.1 The accident record for this section of Edge Lane is shown in the following table:

	2003		2004		2005		2006		2007		2008		Total
	SL	SE	SL	SE	SL	SE	SL	SE	SL	SE	SL	SE	
Rear Shunt			8		4		2		2		1		17
Pedestrian			1			1			1		1		4
Driver Error					2		1		1				4
Right Turn					1		4		2		1		8
Loss of Control					1		1						2
Lane Change					1		1						2
U-Turn Manoeuvre							1						1
Total	0	0	9	0	9	1	10	0	6	0	3	0	38

3.4.2 17 rear shunt accidents have occurred over the study period. 4 accidents involved a pedestrian and 1 accident was as a result of a u – turn. 1 of the accidents was serious in severity and is detailed below.

3.4.3 Accident ref ET0003705 occurred on 14<sup>th</sup> January 2005 at 16:40 on a dry road surface in dark street lit conditions. The accident involved a pedestrian attempting to cross the 3 lane carriageway and was struck by a vehicle. From the contributory factors the pedestrian failed to judge vehicle's path and / or speed.

**3.5 Area 4 Rathbone Road between Borax Street and Binns Road**

3.5.1 The accident record for this is shown in the following table:

	2003		2004		2005		2006		2007		2008		Total
	SL	SE	SL	SE	SL	SE	SL	SE	SL	SE	SL	SE	
Rear Shunt					1								1
Pedestrian							2		1				3
Driver Error						1	1						2
Right Turn							1						1
Loss of Control					1								1
Lane Change													0
U-Turn Manoeuvre			2		1						1		4
Miscellaneous			1				1						2
Total	0	0	3	0	3	1	5	0	1	0	1	0	14

3.5.2 U-turn manoeuvre accidents appear to be the main type of accidents which have occurred. 1 accident was serious in severity and is detailed below.

3.5.3 The accident occurred on 26<sup>th</sup> November 2005 at 17:36 on a dry road surface in dark street lit conditions. The accident involved a cyclist being hit by a car as he crossed the road. From the contributory factors the cyclist failed to look properly.

**3.6 Area 5 Edge Lane / Mill Lane Junction and Mill Lane**

3.6.1 The accident record for this junction is shown in the following table:

	2003		2004		2005		2006		2007		2008		Total
	SL	SE	SL	SE	SL	SE	SL	SE	SL	SE	SL	SE	
Rear Shunt					1				1				2
Pedestrian					1		1						2
Driver Error			1				1						2
Right Turn			1					1		1			3
Loss of Control				1	1		1	1					4
Lane Change													0
U-Turn Manoeuvre													0
Miscellaneous			1										1
Total	0	0	3	1	3	0	3	2	1	1	0	0	14

3.6.2 4 serious accidents occurred at this junction. Loss of Control accidents appear to be the main type of accidents which have occurred. The 4 serious accidents are detailed below.

- 3.6.3 Accident ref ET0055204 occurred on 13<sup>th</sup> March 2004 at 00:30 on a dry road surface in dark street lit conditions. The accident involved a vehicle travelling at speed, clipping the kerb and colliding into a lamp post.
- 3.6.4 Accident ref EE1053706 occurred on 20<sup>th</sup> March 2006 at 08:10 on a dry road surface in light conditions. The accident involved a vehicle turning right across the path of another vehicle causing a collision. From the contributory factors the driver failed to look properly.
- 3.6.5 Accident ref E1549607 occurred on 24<sup>th</sup> February 2007 at 19:35 on a dry road surface in dark street lit conditions. The accident involved a vehicle turning right across the path of an oncoming vehicle. From the contributory factors the driver failed to look properly and failed to judge the other vehicle's path and / or speed.
- 3.6.6 The remaining serious recorded accident occurred on 30<sup>th</sup> September 2006 at 12:45 on a dry road surface in light conditions. The accident involved a bus driver having a sneezing fit, losing control of the bus and colliding with a mobile phone transmitter. From the contributory factors the driver had an illness or disability, mental or disabled.
- 3.7 Conclusion**
- 3.7.1 The personal injury accident data received from the Council has established that the type, level, severity and the low number of accidents that have occurred in this extremely busy urban area leads to the conclusion that the proposed re-development will not have a detrimental effect on highway or pedestrian safety.

## **4. SUSTAINABLE TRANSPORT**

### **4.1 *Bus Services***

4.1.1 Edge Lane to Rathbone Road stretches for approximately 700m adjacent to the application site along which 9 bus stops can be found. These are shown on the plan attached at **Figure 2**.

4.1.2 A summary of bus stop facilities along Edge Lane can be found below:

#### **Bus stop reference: S41092A**

Bus stop location: Edge Lane/Children's Playground

Direction of travel: Westbound

Buses towards: Liverpool

Bus stop facilities: Shelter, seating, road marking, raised kerb

Available service: 6, 7, 116

#### **Bus stop reference: S41092B**

Bus stop location: Edge Lane/Carwash

Direction of travel: Eastbound

Buses towards: Warrington, Huyton

Bus stop facilities: Road marking, timetable, raised kerb

Available service: 6, 7, 116

#### **Bus stop reference: S41066A**

Bus stop location: Edge Lane/Allied Centre

Direction of travel: Westbound

Buses towards: Liverpool

Bus stop facilities: Shelter, seating, road marking, raised kerb

Available service: 6, 7, 116

#### **Bus stop reference: S41066B**

Bus stop location: Edge Lane/Fruit & Veg Market

Direction of travel: Eastbound

Buses towards: Warrington, Huyton

Bus stop facilities: Shelter, seating, road marking, raised kerb

Available service: 6, 7, 116

**Bus stop reference: S41216B**

Bus stop location: Edge Lane/Fairfield

Direction of travel: Eastbound

Buses towards: Warrington, Huyton

Bus stop facilities: Timetable, road marking, raised kerb

Available service: 6, 7, 7A, 116

**Bus stop reference: S41216A**

Bus stop location: Edge Lane/Fairfield

Direction of travel: Eastbound

Buses towards: Warrington, Huyton

Bus stop facilities: Timetable, shared road marking with S41216B, raised kerb

Available service: 6, 7, 7A, 116

**Bus stop reference: S41067A**

Bus stop location: Edge Lane/Wavertree Technology Park

Direction of travel: Westbound

Buses towards: Liverpool

Bus stop facilities: Shelter, seating, road marking, raised kerb, timetable

Available service: 6, 7, 7A, 116

**Bus stop reference: S41067B**

Bus stop location: Edge Lane/Westbank Road

Direction of travel: Eastbound

Buses towards: Warrington, Huyton

Bus stop facilities: Shelter, seating, road marking, raised kerb, timetable

Available service: 6, 7, 7A, 116

- 4.1.3 A summary of bus stop facilities along Rathbone Road can be found below:

**Bus stop reference: S41115A**

Bus stop location: Rathbone Road/Binns Road

Direction of travel: Southbound

Buses towards: Aigburth, Liverpool

Bus stop facilities: Shelter, seating, road marking, raised kerb, timetable

Available services: 60, 139, 160

**Bus stop reference: S41065C**

Bus stop location: Rathbone Road/ opp Stephenson Road

Direction of travel: Northbound

Buses towards: Bootle, Broadgreen

Bus stop facilities: Shelter, timetable

Available services: 60, 139, 160

- 4.1.4 A summary of the available services from the above stops can be found below;

**6 – Warrington – Rainhill Stopps – Huyton - Liverpool**

<b>Monday – Friday</b>	30 mins
First/last bus	05:51/18:29
<b>Saturday</b>	30 – 60 mins
First/last bus	05:51/18:28
<b>Sunday</b>	No service
Journey time:	20 mins
Operator	Arriva (North West)

**7 – Liverpool – Huyton**

<b>Monday – Saturday</b>	30 mins
First/last bus	06:20/23:41
<b>Sunday</b>	30 mins
First/last bus	08:43/23:41
Journey time:	25 mins
Operator	Arriva (North West)



**7A – Liverpool – Warrington**

<b>Monday – Saturday</b>	60 mins
First/.last bus	18:11/22:11
<b>Sunday</b>	60 mins
First/last bus	09:13/22:11
Journey time:	60 mins
Operator	Arriva

**60 – Bootle – Aigburth Vale**

<b>Monday – Friday</b>	10 – 30 mins
First/last bus	06:22/23:42
<b>Saturday</b>	10 – 30 mins
First /last bus	06:31/23:42
<b>Sunday</b>	30 mins
First/last bus	06:32/23:42
Journey time:	20 mins
Operator	Arriva (North West)

**116 – Liverpool - Huyton**

<b>Monday – Saturday (1 service)</b>	06:23
<b>Sunday</b>	No Service
Journey time:	12 mins
Operator:	Huyton Travel Ltd

**139 – Prescot - Liverpool**

<b>Monday – Saturday</b>	30 mins
First/last bus	06:32/18:32
<b>Sunday</b>	No Service
Journey time:	18 mins
Operator	Cumfybus

**160 – Bootle – Aigburth Vale**

<b>Monday – Saturday</b>	No Service
<b>Sunday</b>	30 mins
First/last bus	06:32/23:42
Journey time:	15 mins
Operator:	Arriva (North West)

- 4.1.5 Access to each bus stop is provided via well lit footways along Edge Lane and where required, pedestrian crossings are situated at the junctions with Edge Lane and Montrose Way. Also, throughout the retail park pedestrian link footways will be provided for safe navigation towards bus stop facilities. , Some traffic free pedestrian routes on pedestrian desire lines are also to be provided.

## **4.2 Train Services**

- 4.2.1 Wavertree Technology Park Rail Station is located approximately 520m away as shown on the plan attached at **Figure 3**, which is within the desirable walking distance as detailed by the IHT publication 'Providing for Journeys on Foot'.

- 4.2.2 The station provides 2 railway platforms under the management of Northern Rail and offers direct services to Liverpool Lime Street, Manchester Airport and Wigan North Western.

- 4.2.3 A summary of the services are listed below:

### **Wavertree – Liverpool Lime Street**

#### Manchester – Liverpool (via Earlestown) - Operator: Northern Rail

Monday to Saturday daytime	6 per hour
Late evening	3 per hour
Sundays	3 per hour
Journey time	10 minutes (Direct)

### **Wavertree – Manchester Airport**

#### Liverpool – Manchester (via Earlestown) - Operator: Northern Rail

Monday to Saturday daytime	60 minutes
Late evening	1 – 2 hours
Sundays	60 minutes
Journey time	60 minutes

### **Wavertree – Wigan North Western**

#### Liverpool –Wigan and Preston - Operator: Northern Rail

Monday to Saturday daytime	20 minutes
Late evening	30- 60 minutes
Sundays	60 minutes

Journey time

45 minutes

- 4.2.4 Wavertree Technology Park Rail Station has the benefit of cycle storage facilities for 6 cycles and a bus stop on Wavertree Avenue providing bus services towards Liverpool.

### 4.3 ***Walking***

- 4.3.1 The Institution of Highways and Transportation publication 'Providing for Journeys on Foot' contains a range of desirable, acceptable and preferred maximum walking distances for a variety of types of journeys. For commuting journeys the walking distances vary between 500, 1000 and 2000m. These distances, centred on the Mill Lane access to the site, are shown on the plan attached at **Figure 4**.
- 4.3.2 There are existing bus stops within the immediate vicinity of the site and are therefore easily accessible for residents travelling by bus. Pedestrian crossings are provided on both Rathbone Road and Montrose Way junctions to Edge Lane which allow the public safe access across towards eastbound bus stops on Edge Lane and southbound bus stops on Rathbone Road. Adequate footways are provided on all surrounding roads, maintained to the Local Authorities standards.
- 4.3.3 The IHT document 'Providing for Journeys on foot' states that a suggested maximum walking distance to Town Centres is 800m. Whilst extensive amenities within Liverpool City Centre exceed this threshold, Edge Lane provides a mixture of amenities. A selection of the available facilities are summarised below:

<b>Destination</b>	<b>Distance</b>	<b>Journey Time</b>
Public House	200m	3 minutes
Café	210m	3 minutes
Barbers	215m	3 minutes
Cycle shop	250m	3 ½ minutes
Newsagents	290m	4 minutes
Fast Food	310m	4 minutes
DIY	330m	5 minutes
Golf superstore	460m	6 minutes
Electronics shop	455m	6 minutes



- 4.5.3 Although not all the target scores were achieved it is considered that the site is situated in a sustainable location. Many of the target scores were influenced by the density of the surrounding housing. The housing nearest to the existing retail park is within the 50+/-hectare bracket but further east this reduces to the other two levels specified. However, it is still considered that the proposed development and the opportunities it will provide are accessible at an appropriate level.

**4.6 Travel Plan**

- 4.6.1 A Travel Plan Framework for the whole redevelopment site has been produced for submission with the planning application which contains measures and initiatives to further encourage and promote the use of sustainable travel modes.

**4.7 Conclusions on Sustainable Transport**

- 4.7.1 The application site is in an excellent sustainable location. Potential customers are able to take full advantage of nearby bus and rail facilities along with employees at the proposed stores and other facilities proposed as part of the development. Furthermore, customers and employees will be able to take full advantage of the local amenities on offer in short walking or cycling distances away from the site which will help to reduce the reliance upon the private car.

## **5. PROPOSED DEVELOPMENT**

### **5.1 *Development Proposals***

5.1.1 The proposed development consists of the following and is broadly as per the attached site layout drawing prepared by AEW Architects and referenced M3458 P3-101 Rev B:- as provided in the drawings attached in the appendices.

- 62,422m<sup>2</sup> Retail Park excluding food (inc 6494m<sup>2</sup> DIY Store)
- 18,911m<sup>2</sup> Leisure  
(9,394m<sup>2</sup> Cinema, 6,304m<sup>2</sup> Gym and 3,213m<sup>2</sup> Bowling Alley)
- 1,050m<sup>2</sup> Restaurants (in addition to existing McDonalds 352 m<sup>2</sup> retained)

5.1.2 The robustness of the retail trip attraction has been modelled on the basis that the uncovered DIY store storage will in time become covered and therefore attract trips. On this basis this is a cautious approach to enable the potential development to be assessed.

### **5.2 *Access***

5.2.1 The site will be accessed via four alternative access locations as detailed below:

- Montrose Way (existing access)
- Crawford Way (existing access)
- Rathbone Road (proposed access)
- Milton Road (proposed access) upgraded to allow all turning movements on Edge Lane

5.2.2 Within the development site it is proposed to formally Stop-Up the existing routes of Montrose Way (south of access to McDonald's) and Binns Road. This will enable the effective control of rat-running traffic that currently occurs through the area which will be of great benefit to pedestrian and cycle movements.

5.2.3 The existing junction of Edge Lane/Binns Road will be closed with Milton Road being realigned to join up with the existing Binns Road in the vicinity of the railway line. Binns Road within the development site will be formally closed.

- 5.2.4 The Edge Lane/Milton Road junction is to be significantly improved and signalised. The central reserve on Edge Lane will be opened to allow an all movement access and Milton Road will be widened. Pedestrian facilities will be provided across Milton Road and the Eastern side of Edge Lane. This junction can be seen in detail on Drawing 5796/006.
- 5.2.5 Milton Road is to be realigned between it's junctions with Edge Lane and Dryden Road and will be extended to meet the remaining section of Binns Road to the west of it's junction with Crawford Way.
- 5.2.6 A mini-roundabout will be constructed at the junction of Milton Road/Dryden Road/Binns Road to provide access into the service yard for Unit 46. A second service access and egress arrangement will be formed off Binns Road to the west of Crawford Way and an access into the car parking area will be formed to the east of the mini-roundabout at Dryden Road to serve Units 42-44 and 47.
- 5.2.7 The existing Binns Road and its junction with Edge Lane will be closed and kerbed through. This will enable all traffic movements to be reallocated to the significantly improved junction of Milton Road.
- 5.2.8 The existing bridge over the railway which formerly formed part of the alignment of Lear Road will be reopened to allow pedestrian, cycle and vehicle movements between the two parts of the development site. However, access will be limited to smaller vehicles by way of a 7.5 t weight restriction. Use of the link will be controlled by way of signals at times when servicing is taking place to Units 22 to 32 on the eastern side of the railway to prevent potential conflict. (See Paragraph 5.4.5)
- 5.2.9 A new signal controlled junction will be constructed onto Rathbone Road to provide access to the eastern end of the site. Rathbone Road will be again significantly improved from Edge Lane through to it's junction with Binns Road to the south. Dedicated lanes for left and right turning traffic exiting the site will be provided with a dedicated right turn in. New pedestrian facilities will also be provided across the site access and the southern side of Rathbone Road.

- 5.2.10 Rathbone Road will be greatly improved with it being widened between this new access and it's junction with Edge Lane to provide two dedicated right turn lanes, one ahead lane and one combined ahead and left turn lane. The existing signal controller at the Edge Lane Drive / Edge Lane / Rathbone Road / St Oswald's Street junction will be upgraded to suit the revised layout.
- 5.2.11 The right turn lane from Edge Lane Drive to St Oswald's Street will be extended back through the existing central reserve to provide additional stacking space for the right turning traffic.
- 5.2.12 The Edge Lane/Montrose Way junction will be realigned to provide an improved left turn lane along the site frontage and an improved right turn lane when approaching from the west. An island will be constructed in the mouth of the current Halfords site access to allow the pedestrian movements to be 'walk with traffic'. Two dedicated right turn lanes will be provided on Montrose Way along with a lengthened left turn lane. These works are shown on Drawing Number 5796/007.
- 5.2.13 The design of the car parking areas enables customers and staff to enter the site from various directions and highway routes as identified in paragraph 5.2.1 The car park and access layout has also been designed to enable drivers of vehicles (customers and staff) to exit the site again by the various routes by providing linkage internal through the site, utilising the ramped areas into the undercroft parking areas. This enables customers to have various options of gaining access to the wider highway network. This will provide easy and direct ingress and egress for them onto the Edge Lane corridor and surrounding residential and employment areas.
- 5.2.14 The central reserve gap opposite Tapley Place will be closed up as there will be no requirement for turning manoeuvres in this location.

### **5.3        *Parking***

- 5.3.1 Liverpool City Councils parking standards are set out in Section 4 of 'Ensuring a choice of Travel Supplementary Planning Document' and are expressed as the maximum number of car parking spaces and minimum number of cycle/motorcycle/disabled spaces required for each planning use class. The relevant standards are summarised below:



**A1 Shops Retail Park (Ex Food) – 62,422 m<sup>2</sup>**

<b>Cycles</b>	Staff	1 secure/300m <sup>2</sup> (Min 2 spaces)
(Minimum Provision)		66,422 m <sup>2</sup> = <b>208 spaces</b>

	Customer	1 space/200m <sup>2</sup> (Min 2 spaces)
		62,422 m <sup>2</sup> = <b>312 spaces</b>

<b>M/Cycles</b>	1 space/500m <sup>2</sup> (Min 2 spaces)
(Minimum Provision)	62,422 m <sup>2</sup> = <b>125 spaces</b>

<b>Car Parking</b>	Within District Centre 1 space/22 m <sup>2</sup>
(Maximum Provision)	Elsewhere 1 space/20 m <sup>2</sup>
	DC – <b>2837 spaces</b>
	Else – <b>3121 spaces</b>

<b>Disabled</b>	Over 200 bays – 4 spaces + 4%
(Minimum Provision)	of the total number of spaces
	62,422 m <sup>2</sup> = DC – <b>117 spaces</b>
	Else – <b>129 spaces</b>

**A3 Restaurants – 1,050 m<sup>2</sup>**

<b>Cycles</b>	Staff	1 secure/300m <sup>2</sup>
(Minimum Provision)		1,050m <sup>2</sup> = <b>4 spaces</b>

	Customer	1 space/300m <sup>2</sup>
		1,050 m <sup>2</sup> = <b>4 spaces</b>

<b>M/Cycles</b>	1 space/350m <sup>2</sup> (Min 2 spaces)
(Minimum Provision)	1,050 m <sup>2</sup> = <b>3 spaces</b>

<b>Car Parking</b>	Within District Centre 1 space/8 m <sup>2</sup>
(Maximum Provision)	Elsewhere 1 space/5 m <sup>2</sup>
	630 m <sup>2</sup> DC – <b>79 spaces</b>
	Else – <b>126 spaces</b>

(based on 60% of 1,050m<sup>2</sup> being public floor area)

<b>Disabled</b>	Up to 200 bays – 3 spaces or 6%
(Minimum Provision)	of the total maximum standard, whichever is greater
	1,050 m <sup>2</sup> = DC – <b>5 spaces</b>
	Else – <b>8 spaces</b>

**D2 Leisure – 18,911 m<sup>2</sup>**

<b>Cycles</b> (Minimum Provision)	Staff	1 secure/5 members of staff 18,911 m <sup>2</sup> = <b>No Info</b>
	Plus Either	1 stand/50m <sup>2</sup> of open public floor space (Min 2 spaces) . 11,347 m <sup>2</sup> = <b>227 stands</b> (Based on 60% of 18,911 m <sup>2</sup> )
	Or	1 per 80 seats No precise info available as yet.

Whichever is the greater of the above should be used.

<b>M/Cycles</b> (Minimum Provision)	1 space/200 seats (Min 2 spaces) 18,911 m <sup>2</sup> = <b>No Info</b>
--	--

<b>Car Parking</b> (Maximum Provision)	Within District Centre 1 space/25 m <sup>2</sup> Elsewhere 1 space/23 m <sup>2</sup> 18,911 m <sup>2</sup> DC – <b>756 spaces</b> Else – <b>822 spaces</b>
---	---

<b>Disabled</b> (Minimum Provision)	Over 200 bays – 4 spaces + 4% of the total number of spaces 18,911 m <sup>2</sup> =      DC – <b>34 spaces</b> Else – <b>37 spaces</b>
--	---

5.3.2 It is proposed to provide a total of some 1680 car parking spaces within the retail and leisure development areas. These are spread over two levels with extensive undercroft parking areas being provided with motorised walkways and lifts to ground level. This provision is well within the maximum levels detailed above.

5.3.3 A total of some 72 dedicated disabled are to be provided which is equivalent to the 4% + 4 spaces required. The disabled spaces are spread over the entire site and conveniently located close to the strategic building entrances.

5.3.4 Although the Councils' guidelines do not specify an allocation for parent and child parking, from an operational point of view they are considered a requirement. A total of some 29 such bays are proposed and are located in convenient locations close to the main entrances to the units.

5.3.5 The site layout also incorporates in the region the following cycle and motorcycle provision:-

Cycle (Staff)	106
---------------	-----

Cycle (Customer)	158
Motorcycle	132

5.3.6 The cycle and motorcycle provision are equally spread across the site for the convenience of the staff and customers. Many of the staff spaces are located within the service yard areas where they can be secured. Staff lockers will generally be provided as part of the unit fit-out process. All unit occupiers will be advised of this requirement.

5.3.7 All parking areas will be clearly defined and hard surfaced and drained as necessary. Pedestrian and cycle routes will be clearly defined on the ground and their approximate locations are as defined on the enclosed drawings.

#### **5.4 Servicing**

5.4.1 Service yards are provided for all of the proposed units, many with their own private service access.

5.4.2 Units 1 – 20 will be serviced through a realigned service access off Pighue Lane to enable servicing at the rear of the units. Turning areas have been provided at the rear of units 1/2, 10 and 18 to ensure that vehicles can exit back onto Pighue Lane in a forward gear and undertake servicing manoeuvres.

5.4.3 Service vehicles for units 22–25 will enter through a new service access to the east of the railway line, accessed from Binns Road. A full size 25m diameter turning circle is provided to the rear of Unit 25.

5.4.4 Units 26–32 will be serviced via an undercroft service area which is accessed from the service yard for units 22–25 (see above). Turning facilities are provided within the undercroft area to enable easy exit back onto Binns Road in a forward gear.

5.4.5 Servicing vehicle movements between these two service areas will need to cross the access road to the link over the railway. It is proposed to provide signals to control and provide safe vehicle and pedestrian/cycle movements in this area to prevent conflict occurring. (See also Paragraph 5.2.8)

- 5.4.6 Servicing of the proposed A3 restaurant units and Units 40 and 41, which are located in the central area of the retail park, is from two locations. Firstly from a lay-by adjacent to the existing Binns Road alignment and secondly from a lay-by within the adjacent car parking area. The car park layout has been designed to allow larger vehicles to turn and negotiate to the lay-by and exit the area in forward gear. Swept path vehicle manoeuvres for both facilities are shown on drawing 5796/SK010 Rev A.
- 5.4.7 Units 38 and 39 are to be serviced from a lay-by within the adjacent car parking area. Swept path vehicle manoeuvres for the facility are shown on drawing 5796/SK011 Rev A.
- 5.4.8 The leisure building located off Rathbone Road is serviced via the proposed signalised junction with a service yard located off the new access road. Turning facilities will be provided so the vehicles can exit back to the Rathbone Road junction in a forward gear. Internal signal control arrangements are proposed to control safely vehicle movements to and from the service area in conjunction with those leaving the adjacent undercroft parking area.
- 5.4.9 Units 33 – 37 are proposed to be serviced from the undercroft servicing area which is accessed from the Rathbone Road access road. This area has been designed to accommodate multiple deliveries whilst still allowing HGVs to manoeuvre. Swept path vehicle manoeuvres for these facilities are shown on drawing 5796/SK017.
- 5.4.10 Track runs showing the service yard manoeuvres are shown on Drawing Numbers detailed below and are attached at the rear of this report.
- 5796/SK014 – Undercroft Servicing to Units 26-32 Exit Swept Path  
Analysis of a FTA Design Articulated Vehicle
  - 5796/SK015 – Undercroft Servicing to Units 26-32 Entry Swept Path  
Analysis of a FTA Design Articulated Vehicle
  - 5796/SK016 Units- 1-20 Swept Path Analysis of a FTA Design  
Articulated Vehicle
  - 5796/SK017 – Units 33 to 37 Swept Path Analysis of a FTA Design  
Articulated Vehicle

- 5796/SK018 – Units 47 and 42 to 44 Swept Path Analysis of a FTA Design Articulated Vehicle
- 5796/SK019 – Unit 45 Swept Path Analysis of a 7.5t Panel Van
- 5796/SK020 – Units 22 to 25 Swept Path Analysis of a FTA Design Articulated Vehicle

## **6. TRAFFIC IMPACT ASSESSMENT**

### **6.1 Traffic Surveys**

6.1.1 Fully classified peak hour traffic surveys have been undertaken on a weekday and Saturday at the following junctions:

- Edge Lane Drive/Mill Lane
- Edge Lane Drive/Edge Lane/Rathbone Road/St Oswald's Street
- Rathbone Road/Binns Road
- Edge Lane/Montrose Way
- Edge Lane/Laurel Road

6.1.2 The network peak hours have been identified as being 07:45-08:45 and 16:30-17:30 on a weekday and 13:30-14:30 on a Saturday and the existing peak hour traffic surveys are illustrated on **Figures 6 – 8** at the rear of this report.

6.1.3 **Figures 9 – 11** attached at the rear of this report show the above base traffic survey results growthed up to 2010. Please see Paragraph 6.3.4 for the growth factor calculations.

6.1.4 Currently, as identified from surveys and observations the retail park is utilised as a rat run between Edge Lane and Pighue Lane. The internal layout has been designed to discourage this movement of traffic, to provide a safer retail development, as such traffic has been redistributed on the local highway network using the alternative routes along Rathbone Road or Binns Road / Milton Road. The redistributed traffic is illustrated on **Figures 12 - 14**

6.1.5 As the existing junction of Binns Road with Edge Lane will be closed, the existing traffic has been redistributed at the Milton Road / Binns Road junction which will be upgraded to allow for all movements. The redistributed flows are contained in **Figures 15 – 17**.

6.1.6 The base flows for 2010 and 2020 with the rat running traffic removed are contained in **Figures 18 – 23** attached at the rear of this report.

## 6.2 Trip Generations

6.2.1 The TRICS database is the main industry standard tool which predicts the number of vehicle movements likely to be generated by various forms of development.

6.2.2 In order to estimate the likely level of traffic generated by the proposals the TRICS 2010 (b) v6.6.1 online database has been utilised. The 'Vehicles' calculation option has been utilised as this includes a greater number of surveys than the 'Multi Modal' calculation option. Sites within Greater London, Wales, Scotland, Connaught, Munster, Leinster, Greater Dublin, Ulster (Republic of Ireland) and Ulster (Northern Ireland) have been excluded. As the PM and Saturday peak hours fall between hours (16:30-17:30 hrs and 13:30-14:30 hrs), the highest trip rate between the nearest hours has been utilised for surveys which only include hourly trip rates. This methodology is considered to be robust.

6.2.3 The full TRICS output is contained within **Appendix C** with the trip rates per 100m<sup>2</sup> GFA, summarised in the table below:-

Land Use		Weekday		Saturday	
		Arrivals	Departures	Arrivals	Departures
Retail Park Exc Food	AM	0.682	0.339	-	-
	PM	1.55	1.627	3.202	3.122
Gym	AM	0.550	0.613	-	-
	PM	1.517	1.030	0.933	0.848
Cinema	AM	0	0	-	-
	PM	2.126	1.677	3.343	2.875
DIY with garden centre	AM	0.819	0.507	-	-
	PM	1.467	1.641	3.853	3.611
Restaurant	AM	0	0	-	-
	PM	2.632	1.902	2.697	2.163

6.2.4 The junction capacity assessment has also taken into account other nearby applications by the same applicant. The development details and relevant trip rates are detailed below:

- Proposed Industrial units - Edge Lane, Liverpool – Comprising of Sanders relocation (3,357m<sup>2</sup>) and 1785m<sup>2</sup> of B2/B8 units.
- Proposed extension to Healthcare facility – Mill Lane, Liverpool – Comprising of a 5,770m<sup>2</sup> extension.

Land Use		Weekday		Saturday	
		Arrivals	Departures	Arrivals	Departures
Industrial Unit	AM	0.338	0.066	-	-
	PM	0.061	0.419	0.061	0.419

6.2.5 A traffic survey has been undertaken at the existing hospital to ascertain the current level of vehicular activity. The existing traffic generation has been increased on a pro rata basis based upon the increase in gross floor area. A summary of the existing survey and proposed traffic generations are tabulated below:

Weekday Assessment Period	Existing Healthcare facility 7,680m <sup>2</sup>		Proposed Healthcare facility 7,680m <sup>2</sup> + 5,770m <sup>2</sup> = 13,450m <sup>2</sup>		NET increase	
	Traffic Flow		Traffic Flow		Traffic Flow	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
0800-0900	26	7	46	12	20	5
1630-1730	8	25	14	42	6	18
Saturday*	-	-	-	-	17	17

\* Saturday flows assumed to be 60% of AM peak flows with a 50/50 arrival/departure split

### 6.3 *Traffic Distribution, Growth & Generation*

6.3.1 Details of the proposed primary distribution of traffic between the four possible means of access/egress to the development are illustrated on **Figures 24, 25 and 26** and are summarised below:

#### Weekday AM Peak

40% Montrose Way  
15% Rathbone Road  
15% Milton Road  
30% Crawford Way

#### Weekday PM Peak

35% Montrose Way  
10% Rathbone Road  
25% Milton Road  
30% Crawford Way



Saturday Peak

35% Montrose Way  
15% Rathbone Road  
25% Milton Road  
25% Crawford Way

6.3.2 The distribution figures above take into account the tidal flow along Edge Lane.

6.3.3 **Figures 27 – 62** illustrate the proposed traffic distribution from each of the above accesses along with the traffic distribution for the proposed industrial development opposite Montrose Way and the proposed Healthcare Facility extension.

6.3.4 Growth factors have been generated utilising the latest version of TEMPRO adjusted against Table AF08 of the Department for Transport's National Traffic Model, as per the latest guidance contained within DfT WebTag Unit 3.9.5. These have been used to forecast the base traffic flows for a year of 2010 and a design year of 2020. The Growth factors used are indicated in the table below.

	2008-2010	2009-2010	2010-2020
Weekday AM	0.9994	0.9997	1.1753
Weekday AM	1.0009	1.0004	1.172
Saturday	1.0015	1.0007	1.1703

6.3.5 In order to ascertain the level of impact the proposed development will have at the site accesses and beyond, the junctions under consideration have been assessed assuming the 2010 and 2020 base highway flows and the 2010 and 2020 base highway flows combined with the proposed development as generated by the proposed development.

6.3.6 The traffic surveys undertaken will already include traffic associated with the existing retail park. For the purpose of junction assessment the proposed net increase in GFA has been added to the operational units to assess the impact of the development. The NET changes in floor areas of the proposed development and the units which were operational at the time of the surveys are summarised below:

Use	Existing Gross Floor Area (m <sup>2</sup> )	Proposed Gross Floor Area (m <sup>2</sup> )	NET Gross Floor Area (m <sup>2</sup> )
Retail Park excluding food	18,032	55929	+37,897
DIY & Garden Centre	6,078	6494	+416
Cinema	3,452	9394	+5942
Gym	3,494	6304	+2810
Bowling	4,588	3213	-1372
Restaurants	926	1402*	+476

\*includes 352m<sup>2</sup> McDonalds which will be retained on site

6.3.7 As the Bowling use will be reduced in size, traffic has not been assigned to this particular use as the related traffic generation is already included in the traffic surveys.

6.3.8 The resultant traffic generation based upon the above proposed NET increases in gross floor area are tabulated below:

Land Use		Weekday		Saturday	
		Arrivals	Departures	Arrivals	Departures
Retail Park Exc Food	AM	258	128	-	-
	PM	587	617	1213	1183
Cinema	AM	0	0	-	-
	PM	126	100	199	171
Gym	AM	15	17	-	-
	PM	43	29	26	24
Restaurant	AM	0	0	-	-
	PM	13	9	13	10
Industrial units	AM	6	1	-	-
	PM	1	7	1	7
Sanders relocation	AM	19	4	-	-
	PM	3	22	3	22
Healthcare facility extension	AM	20	5	-	-
	PM	5	18	17	17
DIY Garden Centre	AM	3	2	-	-
	PM	6	7	16	15
<b>TOTAL</b>	AM	321	157	-	-
	PM	784	809	1488	1449

6.3.9 **Figures 63 – 65** show the proposed traffic generations allocated to the network.

6.3.10 **Figures 66 – 68** show the 2010 base plus proposed traffic flows with the 2020 figures shown on **Figures 69 – 71**.

## **6.4 Junction Modelling**

6.4.1 TRANSYT 12 has been utilised to assess the following existing junctions:

- Edge Lane Drive/Mill Lane
- Edge Lane Drive/Edge Lane/Rathbone Road/St Oswald's Street
- Rathbone Road/Binns Road
- Edge Lane/Montrose Way
- Edge Lane/Laurel Road

6.4.2 In addition, two proposed junctions that will provide access to the development have been assessed when considering the impact of the proposals. These junctions are:

- Edge Lane/Milton Road
- Rathbone Road/Retail Park

6.4.3 In order to produce accurate models of the existing network, large amounts of data has been obtained from Liverpool 2020. The following data has been obtained for all the existing junctions:

- Summary of signal controller specification ('quick reference card') with phases, staging, intergreens, stage change information and phase lags
- Scale drawings showing all approaches
- Printouts from the SCOOT database showing all timing information for AM, PM and Saturday lunchtime peak periods

6.4.4 The controller information and timings for the base models have been taken from the above data provided by Liverpool 2020, therefore the models are based on the actual stage timings used on street with no optimisation from Transyt. Where stages are shown not running (for example all red pedestrian stages) they have been excluded from the models. Where demand dependant stages appear to run more frequently than once in alternate cycles they have been modelled as running in every cycle as this represents an absolute worst case scenario in terms of overall delay on the highway network.

- 6.4.5 The network operates on SCOOT and printouts from Liverpool 2020 have been obtained for a typical day. The nature of SCOOT operation means that the cycle time and stage timings will change from cycle to cycle, therefore a common cycle time has been deduced for each peak period from this data and average stage times have been calculated for each junction during the peaks.
- 6.4.6 The capacity threshold for a traffic signal controlled junction is a degree of saturation of 90%. This threshold is consistent with established traffic signal practice. It should be noted that this represents the practical rather than the absolute limits for the junction. The practical limit of 90% still has 10% spare capacity whereas the absolute limit stands at 100%.
- 6.4.7 As the traffic counts were undertaken on different days there are some discrepancies between one junction and the adjacent junction. Transyt is able to account for differences in flows between junctions by automatically changing by the same proportion (either increasing or decreasing) the flows entering the link from upstream links so that the combined value is the same as the total flow on the link. The upstream entry flows are not used directly within Transyt and simply define the proportion of the total flow that comes from each upstream link. Where any turning flows are less than 10 they have been included in the model as 10 because this is the minimum flow allowed in Transyt.
- 6.4.8 A network model of the existing junctions has been produced for all peak periods and has been validated through peak hour site visits. These models are discussed below and all Transyt results are included in **Appendix D**.
- 6.4.9 In order to accurately replicate the queue lengths observed on site during the peak hour site visits, adjustments to the RR67 calculated saturation flows have been made. Traffic does flow quickly along the Edge Lane corridor therefore higher than usual saturation flows are experienced.
- 6.4.10 In some instances bonus greens have been added to mimic the observed red-running that occurs to give a more accurate representation of the level of queuing on the network.

- 6.4.11 Site visits showed that the remote pedestrian crossings at Edge Lane Drive / Mill Lane are used infrequently. They have therefore been excluded from the models. Although not used on site, end lags on Mill Lane have been shown in the model as they give a more correct representation of the observed queue lengths.
- 6.4.12 The SCOOT printouts show that during the AM peak the Halfords site link at Edge Lane / Montrose Way runs very infrequently (once in every six cycles). As it only runs for the minimum green time of seven seconds it has been omitted from the Transyt model. This is considered to be an acceptable assumption as there will be a minimal impact on the capacity during the existing peak periods.
- 6.4.13 The Rathbone Road / Binns Road junction runs on a 60 second cycle during the AM peak with the pedestrian phase being called on average in alternate cycles. It has therefore been double cycled in the model with the pedestrian phase called in alternate cycles.
- 6.4.14 Despite Montrose Way being marked as one lane, site visits showed that queuing occurs in two lanes during the PM and Saturday peaks, therefore the saturation flows on Montrose Way have been increased in these peaks to take account of this two lane queuing and subsequent additional discharge as observed.
- 6.4.15 The SCOOT printouts show that the Edge Lane / Laurel Road junction is isolated from the SCOOT network during the Saturday peak therefore the timings in the model are the optimised timings from Transyt. Stage 1 (the right turn into the Innovation Centre) runs very infrequently during the Saturday peak therefore it has been excluded from the model.
- 6.4.16 The base models for 2010 show that extensive queuing and delay are currently experienced along this network. This has been confirmed and the models validated with peak hour site visits and observations.
- 6.4.17 The majority of the queuing occurs at the Edge Lane Drive / Edge Lane / Rathbone Road / St Oswald's Street junction. The maximum degree of saturation predicted in the 2010 base scenario is 140%. (with no development) This is during the PM peak and occurs in the middle lane of

Rathbone Road with ahead traffic to St Oswald's Street and right turning traffic to Edge Lane Drive.

6.4.18 Queuing that is in excess of the available stacking space occurs during all peak periods with the main instances being observed at the Edge Lane Drive / Edge Lane / Rathbone Road / St Oswald's Street junction. These queues arise on the right turn from Edge Lane Drive to St Oswald's Street and also on the Rathbone Road approaches.

6.4.19 A summary of the 2010 existing base traffic assessment (with no development) is shown below with the full Transyt output contained in **Appendix D**.

			AM Existing		PM Existing		SAT Existing	
			DoS	MMQ	DoS	MMQ	DoS	MMQ
Edge Lane / Laurel Road / Technology Park	111	Edge Lane E/B A & L	69	17	105	49+	71	16
	112	Edge Lane E/B A	65	16	99	36	67	15
	113	Edge Lane E/B RT	22	1	8	0	-	-
	114	Technology Park LT	3	0	6	1	8	0
	115	Technology Park A	6	0	9	1	6	0
	116	Technology Park RT	6	0	7	1	6	0
	117	Edge Lane W/B LT	2	1	1	0	1	0
	118	Edge Lane W/B A 1	95	39	60	13	55	8
	119	Edge Lane W/B A 2	36	5	46	5	23	1
	120	Edge Lane W/B RT	72	7	64	9	71	9
	121	Laurel Road A & LT	67	7	61	6	70	7
	122	Laurel Road RT	49	5	39	4	23	2
Edge Lane / Montrose Way	211	Edge Lane E/B A & L	41	8	74	26	55	19
	212	Edge Lane E/B A	38	9	48	14	28	4
	213	Edge Lane E/B RT	20	1	27	2	38	2
	214	Montrose Way LT	8	1	9	1	13	2
	215	Montrose Way A & RT 1	31	3	57	7	68	10
	217	Edge Lane W/B LT	12	1	14	1	29	4
	218	Edge Lane W/B A 1	91	26	67	9	82	17
	219	Edge Lane W/B A 2	76	8	56	6	68	6
	220	Halfords Site	-	-	30	2	38	2
	221	Edge Lane W/B RT	4	0	3	0	29	1
Edge Lane / Edge Lane Drive / Rathbone Road / St Oswald's Street	311	Edge Lane E/B LT (Give Way)	26	2	55	5+	61	8+
	312	Edge Lane E/B A 1	56	8	80	16	47	9
	313	Edge Lane E/B A 2	52	6	75	10	43	5
	314	Edge Lane E/B A 3	35	2	51	5	29	1
	315	Edge Lane E/B RT	41	2	16	1	27	1
	316	Rathbone Road A & LT	81	8	96	17	91	12
	317	Rathbone Road A (A & R)	136	50+	140	84+	130	49+

	318	Rathbone Road RT 1	66	5	79	10+	50	4
	321	Edge Lane Drive W/B A 1 & L	78	26	43	10	50	13
	322	Edge Lane Drive W/B A 2	83	23	46	10	53	13
	323	Edge Lane Drive W/B A 3	56	10	31	3	36	6
	324	Edge Lane Drive W/B RT 1	102	26+	114	45+	130	67+
	326	St Oswald's Street A & LT	106	32	83	12	65	10
	327	St Oswald's Street A	109	36	86	13	73	12
	328	St Oswald's Street RT	43	5	36	4	44	6
Edge Lane Drive / Mill Lane	411	Edge Lane Drive E/B A 1	41	6	57	10	35	5
	412	Edge Lane Drive E/B A 2	31	6	44	6	24	3
	413	Edge Lane Drive E/B A 3	16	3	24	4	10	2
	414	Edge Lane Drive E/B RT	73	6	90	10	82	9
	415	Mill Lane LT	64	11	49	8	59	9
	416	Mill Lane RT	89	14	89	14	53	6
	417	Edge Lane Drive W/B LT	50	11+	31	6	18	3
	418	Edge Lane Drive W/B A 1	58	16	28	6	30	7
	419	Edge Lane Drive W/B A 2	91	39	46	11	49	12
	420	Edge Lane Drive W/B A 3	37	8	34	7	32	7
Rathbone Road / Binns Road	511	Binns Road E/B LT, A & RT	24	1	36	1	18	1
	512	Rathbone Road N/B A & LT	75	13	72	23	63	11
	513	Rathbone Road N/B RT	56	1	46	15+	38	2
	514	Binns Road W/B LT, A & RT	83	8	33	2	23	1
	515	Rathbone Road S/B R, A & LT	86	26	27	17	36	6

Table 6.4.1 – 2010 Base Traffic Flows

6.4.20 As described above in Section 6.3, the 2010 traffic data has been growthed to 2020. A further assessment has been undertaken for these 2020 figures assuming that no development takes place and no improvements are made to the existing traffic signals or approach network. The signal staging and timing data from the 2010 base models has been used.

6.4.21 The results from the 2020 base models show that, as expected, the queuing and delay highlighted above is exacerbated by the increase in traffic flows.

6.4.22 In the base scenario, with no development, but with traffic growth to 2020 the maximum degree of saturation is predicted to achieve 183%. This is purely as a result of traffic growth on the highway network (from 2010 to 2020) as described in paragraph 6.4.20. These base models assume that no development takes place with no improvements to the operation or design of the traffic signals. When the development and its off site and junction improvements are implemented (as explained later in this section) this

maximum degree of saturation level is significantly reduced as a result of the development and improvements.

6.4.23 A summary of the 2020 base traffic assessment is shown overleaf with the full Transyt output contained in Appendix D.

			AM Existing		PM Existing		SAT Existing	
			DoS	MMQ	DoS	MMQ	DoS	MMQ
Edge Lane / Laurel Road / Technology Park	111	Edge Lane E/B A & L	68	17	123	111+	61	13
	112	Edge Lane E/B A	89	28	116	91+	89	27
	113	Edge Lane E/B RT	26	1	8	0	-	-
	114	Technology Park LT	3	0	8	1	10	0
	115	Technology Park A	6	0	10	1	6	0
	116	Technology Park RT	6	0	9	1	6	0
	117	Edge Lane W/B LT	2	1	2	0	1	0
	118	Edge Lane W/B A 1	65	13	70	19	60	9
	119	Edge Lane W/B A 2	84	24	54	8	30	2
	120	Edge Lane W/B RT	81	9	74	9	90	14+
	121	Laurel Road A & LT	79	9	71	8	87	10
	122	Laurel Road RT	57	6	46	5	29	2
Edge Lane / Montrose Way	211	Edge Lane E/B A & L	48	13	65	18	50	16
	212	Edge Lane E/B A	45	11	41	1	46	6
	213	Edge Lane E/B RT	23	2	27	2	45	4
	214	Montrose Way LT	9	2	9	1	16	3
	215	Montrose Way A & RT 1	36	3	74	9	80	12
	217	Edge Lane W/B LT	14	0	13	0	34	5
	218	Edge Lane W/B A 1	103	62	61	9	95	29
	219	Edge Lane W/B A 2	85	13	51	7	80	9
	220	Halfords Site	-	-	-	-	45	3
	221	Edge Lane W/B RT	4	0	11	0	25	1
Edge Lane / Edge Lane Drive / Rathbone Road / St Oswald's Street	311	Edge Lane E/B LT (Give Way)	31	3	59	6+	72	10+
	312	Edge Lane E/B A 1	66	11	83	19	55	11
	313	Edge Lane E/B A 2	61	6	72	12	51	7
	314	Edge Lane E/B A 3	41	4	59	10	34	2
	315	Edge Lane E/B RT	82	5	18	1	37	2
	316	Rathbone Road A & LT	95	13	95	17	107	25
	317	Rathbone Road A (A & R)	160	77+	183	155+	152	79
	318	Rathbone Road RT 1	77	7	93	14+	59	5
	321	Edge Lane Drive W/B A 1 & L	92	37	51	13	58	15
	322	Edge Lane Drive W/B A 2	91	29	54	13	62	11
	323	Edge Lane Drive W/B A 3	63	12	37	5	42	4
	324	Edge Lane Drive W/B RT 1	120	58+	134	86+	153	107+
	326	St Oswald's Street A & LT	125	68+	97	19	77	13
	327	St Oswald's Street A	128	75+	101	23	85	15



	328	St Oswald's Street RT	50	6	42	5	52	7
Edge Lane Drive / Mill Lane	411	Edge Lane Drive E/B A 1	46	6	58	8	40	6
	412	Edge Lane Drive E/B A 2	36	6	44	7	29	2
	413	Edge Lane Drive E/B A 3	19	3	29	4	12	1
	414	Edge Lane Drive E/B RT	79	7	100	14+	96	13+
	415	Mill Lane LT	76	14	57	9	69	11
	416	Mill Lane RT	104	27	104	28	62	7
	417	Edge Lane Drive W/B LT	39	7	36	7	21	3
	418	Edge Lane Drive W/B A 1	68	21	33	7	35	8
	419	Edge Lane Drive W/B A 2	107	100+	54	14	57	15
	420	Edge Lane Drive W/B A 3	44	10	40	9	37	8
Rathbone Road / Binns Road	511	Binns Road E/B LT, A & RT	34	1	37	1	20	1
	512	Rathbone Road N/B A & LT	88	18	84	33	73	14
	513	Rathbone Road N/B RT	70	2	100	27+	51	3
	514	Binns Road W/B LT, A & RT	97	14	38	2	27	1
	515	Rathbone Road S/B R, A & LT	93	36	31	26	43	7

Table 6.4.2 – 2020 Base Traffic Flows

- 6.4.24 As discussed in Section 5 of this report, two new signal controlled junctions are proposed to facilitate access to the redeveloped site. These junctions are located on Edge Lane at the junction with Milton Road and on Rathbone Road between the junctions with Edge Lane and Binns Road. Improvement works are proposed at the junctions of Edge Lane / Montrose Way and Edge Lane Drive / Edge Lane / Rathbone Road / St Oswald's Street. Details of the new junctions and the improvement works are shown on the drawings at the rear of the report.
- 6.4.25 Transyt models for the proposed network layout have been produced taking into account all development traffic and the two new proposed junctions and the improvement works at the Edge Lane / Montrose Way and Edge Lane Drive / Edge Lane / Rathbone Road / St Oswald's Street junctions.
- 6.4.26 The summary results shown overleaf show that despite the increase in traffic on the network due to the redevelopment of the site, betterment is obtained at the key junctions along this network with reductions shown in both the maximum degree of saturation and queue lengths when compared with the base scenario, i.e no development.

			AM Proposed		PM Proposed		SAT Proposed	
			DoS	MMQ	DoS	MMQ	DoS	MMQ
Edge Lane / Laurel Road / Technology Park	111	Edge Lane E/B A & L	65	16	91	30	90	25
	112	Edge Lane E/B A	61	16	86	27	85	23
	113	Edge Lane E/B RT	28	1	8	0	8	0
	114	Technology Park LT	3	0	8	1	4	0
	115	Technology Park A	8	0	15	1	8	0
	116	Technology Park RT	8	0	13	1	8	0
	117	Edge Lane W/B LT	2	0	1	0	1	0
	118	Edge Lane W/B A 1	74	18	59	12	78	22
	119	Edge Lane W/B A 2	45	7	42	7	49	7
	120	Edge Lane W/B RT	74	8	89	13	90	17+
	121	Laurel Road A & LT	83	9	90	11	88	11
	122	Laurel Road RT	58	5	49	4	22	2
Edge Lane / Milton Road	811	Edge Lane E/B A 1	50	4	67	5	61	4
	812	Edge Lane E/B A 2	38	4	50	4	34	3
	813	Edge Lane E/B RT	23	1	47	4	88	10
	814	Milton Road LT	33	3	40	6	57	10
	815	Milton Road RT	42	3	81	9	91	14+
	816	Edge Lane W/B A & LT	69	4	63	5	93	36
	817	Edge Lane W/B A	47	1	60	3	75	12
Edge Lane / Montrose Way	211	Edge Lane E/B A & L	50	10	78	20	60	10
	212	Edge Lane E/B A	47	5	73	25	53	16
	213	Edge Lane E/B RT	75	5	79	9	94	16
	214	Montrose Way LT	25	3	23	4	48	10
	215	Montrose Way A & RT 1	58	3	85	10	96	15
	216	Montrose Way RT 2	34	2	54	5	72	7
	217	Edge Lane W/B LT	18	3	28	2	68	8
	218	Edge Lane W/B A 1	80	14	71	11	94	27
	219	Edge Lane W/B A 2	70	4	62	8	82	12
	220	Halfords Site	19	1	45	3	57	3
	221	Edge Lane W/B RT	21	1	15	1	24	1
Edge Lane / Edge Lane Drive / Rathbone Road / St Oswald's Street	311	Edge Lane E/B LT (Give Way)	27	1	70	9+	84	10+
	312	Edge Lane E/B A 1	71	11	97	28	84	15
	313	Edge Lane E/B A 2	66	11	89	21	77	13
	314	Edge Lane E/B A 3	44	7	59	8	51	6
	315	Edge Lane E/B RT	60	3	18	1	42	2
	316	Rathbone Road A & LT	84	8	90	12	84	11
	317	Rathbone Road A (A & R)	91	9	93	13	87	11
	318	Rathbone Road RT 1	71	6	57	5	45	5
	319	Rathbone Road RT 2	72	6	57	5	46	4
	321	Edge Lane Drive W/B A 1 & L	88	31	48	11	70	19
	322	Edge Lane Drive W/B A 2	93	31	51	7	75	16
	323	Edge Lane Drive W/B A 3	63	11	35	2	50	4
	324	Edge Lane Drive W/B RT 1	81	15	98	22	89	17
	326	St Oswald's Street A & LT	88	17	90	14	75	12
	327	St Oswald's Street A	91	18	96	17	91	18
	328	St Oswald's Street RT	36	5	43	5	51	7

Edge Lane Drive / Mill Lane	411	Edge Lane Drive E/B A 1	45	8	58	10	45	6
	412	Edge Lane Drive E/B A 2	32	4	54	16	32	2
	413	Edge Lane Drive E/B A 3	16	2	36	5	13	1
	414	Edge Lane Drive E/B RT	85	8	66	8	71	10
	415	Mill Lane LT	69	12	45	8	60	11
	416	Mill Lane RT	89	14	87	14	54	6
	417	Edge Lane Drive W/B LT	33	6	35	6	21	3
	418	Edge Lane Drive W/B A 1	60	17	36	8	45	11
	419	Edge Lane Drive W/B A 2	90	39	57	15	70	21
	420	Edge Lane Drive W/B A 3	37	8	38	8	36	8
Rathbone Road / Site Access	611	Site Exit LT	13	1	30	2	41	3
	612	Site Exit RT	11	1	20	1	47	4
	613	Rathbone Road N/B A & LT	26	0	44	1	40	7
	614	Rathbone Road N/B A	16	0	25	1	15	2
	615	Rathbone Road S/B A	87	43+	39	11	47	12
	616	Rathbone Road S/B RT	4	0	4	0	16	1
Rathbone Road / Binns Road	511	Binns Road E/B LT, A & RT	34	1	57	2	25	1
	512	Rathbone Road N/B A & LT	72	13	74	23	69	13
	513	Rathbone Road N/B RT	52	1	87	14+	48	3
	514	Binns Road W/B LT, A & RT	86	10	47	2	28	1
	515	Rathbone Road S/B R, A & LT	86	26	27	17	40	5

Table 6.4 3 – 2010 Base Plus Proposed Traffic Flows

- 6.4.27 The improvements at the Edge Lane Drive / Edge Lane / Rathbone Road / St Oswald's Street junction reduce the congestion problems significantly at this junction with all links shown to be operating with a degree of saturation below 100% during the 2010 peak periods.
- 6.4.28 The results show that during the AM peak there are predicted to be no significant increases in queue length on any of the links within the network with some significant decreases seen on Edge Lane W/B at the Montrose Way junction and on Rathbone Road and St Oswald's Street at their junction with Edge Lane. The right turn from Edge Lane Drive to St Oswald's Street also sees a large reduction in queues as a result of the improvement works. The notable exception is the introduction of a queue on Rathbone Road as a result of the new site access. In practise this queue will be much shorter than the one predicted by the model as the site access will be configured to be demand dependent and will only be called when there is a demand, this is expected to very infrequent as there is very little traffic exiting from this junction during the AM peak. When it does get called it will only run for the

minimum green time of 7s. Any increases in existing queue lengths are shown to be minimal (less than 10 pcu's on any link) and will not be noticeable from daily fluctuations. .

6.4.29 The only noticeable increase in queue length for the PM peak can be seen on Edge Lane E/B at the junction with Montrose Way, however the queue lengths are easily accommodated within the available stacking. As with the AM peak, considerable reductions in queue length can be seen on Rathbone Road and the right turn to St Oswald's Street.

6.4.30 During the Saturday peak there is shown to be an increase in queue lengths at the Edge Lane / Montrose Way junction with the notable queue being the right turn from Edge Lane into the retail park, this queue can however be accommodated within the available stacking space. The right turn into Laurel Road at it's junction with Edge Lane also shows a noticeable increase, however in operation, this queue is likely to dissuade drivers from using this route – hence reducing the volume of rat running traffic on Laurel Road. Numerous traffic calming features have been implemented along Laurel Road which indicates that rat running traffic is an existing problem.

6.4.31 As with the base models, the same pattern of increases and decreases in queue lengths and degree of saturation can be seen for the 2020 models taking into account the development traffic.

6.4.32 A summary of the 2020 base traffic assessment is shown overleaf with the full Transyt output contained in Appendix D.

			AM Proposed		PM Proposed		SAT Proposed	
			DoS	MMQ	DoS	MMQ	DoS	MMQ
Edge Lane / Laurel Road / Technology Park	111	Edge Lane E/B A & L	80	22	97	41+	98	35
	112	Edge Lane E/B A	75	21	91	34	92	29
	113	Edge Lane E/B RT	32	2	8	0	8	0
	114	Technology Park LT	3	0	10	1	4	0
	115	Technology Park A	8	0	18	1	8	0
	116	Technology Park RT	8	0	15	1	8	0
	117	Edge Lane W/B LT	2	1	1	0	1	0
	118	Edge Lane W/B A 1	78	20	60	14	84	28
	119	Edge Lane W/B A 2	63	10	47	9	49	11
	120	Edge Lane W/B RT	80	10	97	18+	98	24+
	121	Laurel Road A & LT	86	11	155	55+	120	34

Proposed Mixed Use Development – Edge Lane Liverpool – Transport Assessment

	122	Laurel Road RT	61	6	86	7	31	2
Edge Lane / Milton Road	811	Edge Lane E/B A 1	58	7	75	8	65	4
	812	Edge Lane E/B A 2	44	6	57	3	39	2
	813	Edge Lane E/B RT	27	1	48	4	91	10
	814	Milton Road LT	38	3	43	7	63	11
	815	Milton Road RT	48	3	80	10	97	17+
	816	Edge Lane W/B A & LT	71	13	69	11	94	24
	817	Edge Lane W/B A	60	1	73	9	89	28
Edge Lane / Montrose Way	211	Edge Lane E/B A & L	59	10	89	31	65	11
	212	Edge Lane E/B A	55	7	85	32	60	20
	213	Edge Lane E/B RT	83	6	88	12	105	27+
	214	Montrose Way LT	27	3	24	4	51	10
	215	Montrose Way A & RT 1	71	4	92	14	117	37+
	216	Montrose Way RT 2	33	2	44	4	110	27
	217	Edge Lane W/B LT	20	1	31	2	70	10
	218	Edge Lane W/B A 1	83	20	84	19	104	51
	219	Edge Lane W/B A 2	87	27	73	8	91	21
	220	Halfords Site	19	1	49	3	63	4
	221	Edge Lane W/B RT	19	1	17	1	27	1
Edge Lane / Edge Lane Drive / Rathbone Road / St Oswald's Street	311	Edge Lane E/B LT (Give Way)	33	1	76	7+	92	20+
	312	Edge Lane E/B A 1	86	16	105	46	94	19
	313	Edge Lane E/B A 2	79	15	97	31	101	29
	314	Edge Lane E/B A 3	53	9	65	13	64	9
	315	Edge Lane E/B RT	106	9	24	2	70	4
	316	Rathbone Road A & LT	103	17	102	23	107	25
	317	Rathbone Road A (A & R)	84	8	92	14	100	19
	318	Rathbone Road RT 1	76	7	90	13	52	5
	319	Rathbone Road RT 2	77	7	92	14	53	5
	321	Edge Lane Drive W/B A 1 & L	96	41	58	11	83	25
	322	Edge Lane Drive W/B A 2	97	40	62	7	83	23
	323	Edge Lane Drive W/B A 3	80	20	42	2	56	9
	324	Edge Lane Drive W/B RT 1	89	19	136	90+	120	64+
	326	St Oswald's Street A & LT	111	47+	100	23	91	17
	327	St Oswald's Street A	116	56+	108	33	109	42+
	328	St Oswald's Street RT	45	6	45	5	61	8+
Edge Lane Drive / Mill Lane	411	Edge Lane Drive E/B A 1	52	9	81	19	48	8
	412	Edge Lane Drive E/B A 2	38	5	61	9	36	4
	413	Edge Lane Drive E/B A 3	19	3	32	5	14	2
	414	Edge Lane Drive E/B RT	103	15+	75	10	80	11+
	415	Mill Lane LT	81	15	48	9	68	13
	416	Mill Lane RT	100	23	88	16	63	7
	417	Edge Lane Drive W/B LT	39	7	44	8+	24	4
	418	Edge Lane Drive W/B A 1	67	20	44	11	51	13
	419	Edge Lane Drive W/B A 2	105	93+	69	20	79	27
	420	Edge Lane Drive W/B A 3	47	11	48	11	42	10
bone Road / Site / Acce	611	Site Exit LT	13	1	34	2	46	3
	612	Site Exit RT	11	1	22	1	53	4

	613	Rathbone Road N/B A & LT	30	1	39	4	45	9
	614	Rathbone Road N/B A	18	1	36	3	17	2
	615	Rathbone Road S/B A	95	57+	49	24+	52	13
	616	Rathbone Road S/B RT	4	0	5	1	15	1
Rathbone Road / Binns Road	511	Binns Road E/B LT, A & RT	120	7	59	2	25	1
	512	Rathbone Road N/B A & LT	86	17	78	27	79	18
	513	Rathbone Road N/B RT	83	3	98	25+	62	3
	514	Binns Road W/B LT, A & RT	97	17	50	2	32	2
	515	Rathbone Road S/B R, A & LT	97	40+	31	25	44	8

Table 6.4.4 – 2020 Base Plus Proposed Traffic Flows

- 6.4.33 In general, where links are predicted to operate with a degree of saturation that is greater than 90%, these links are shown to operate over capacity in the base situation and there is actually a decrease in degrees of saturation due to the improvements proposed as part of the development. This is an improvement over the expected and modelled situation without the development proceeding.
- 6.4.34 Where increases in queue length have been predicted by the modelling assessments, they can generally be accommodated within the stacking space available. Where they cannot be accommodated it is considered that the benefits provided as a result of this development far outweigh the few instances where the queue cannot be accommodated during the 2020 peaks. The 2020 peak models are considered to be robust assessments as traffic growth has been applied to the 2010 flows, it is unlikely that this growth will be realised on this already congested network and peak spreading will occur instead.
- 6.4.35 The pedestrian facilities on the new junctions have been designed as far as possible so that the pedestrian phases can run as 'walk with traffic'. On both proposed junctions the pedestrian link over the exit arm is to be demand dependent (links 6114 and 8114). These have not been included in the model as it is anticipated that they will be called less frequently than once in alternate cycles.
- 6.4.36 It is recommended that kerbside detection is used on these crossings to cancel the pedestrian demand if a pedestrian crosses in a gap in the traffic. Due to the relatively narrow crossing widths there is a high probability that this will occur.

**6.5                    *Summary and Conclusions***

- 6.5.1                In conclusion, the traffic modelling shows that by implementing the new junctions and the proposed improvements along this network, the redevelopment of this site can be accommodated without any detriment to the operation of the highway. Significant benefits can be gained in terms of capacity and delay reductions and improvements to pedestrian safety through the provision of additional formal pedestrian crossing facilities.
- 6.5.2                Substantial decreases in queuing and degrees of saturation can be seen at the key junctions in this network, with particular improvements seen at the Edge Lane Drive / Edge Lane / Rathbone Road / St Oswald's Street junction.
- 6.5.3                As demonstrated above the development will deliver improvements to the existing highway network in addition to providing two new signal controlled junctions with safe pedestrian facilities. The benefits to the whole network have been demonstrated with additional benefits in terms of pedestrian safety being provided through the additional formal pedestrian facilities.
- 6.5.4                There are, therefore, no traffic impact reasons why this development cannot proceed as it provides betterment of this important and strategic highway link.

## **7. CONCLUSIONS**

- 7.1 Sanderson Associates (Consulting Engineers) Limited has been appointed by Derwent Holdings Ltd to produce a Transport Assessment in support of a planning application for the redevelopment of the Edge Lane Retail Park, Liverpool.
- 7.2 The personal injury accident data received from the Council has established that, the type, level, severity and the low number of accidents that have occurred in this busy urban area leads to the conclusion that the proposed redevelopment will not have a detrimental effect on highway or pedestrian safety.
- 7.3 The application site is in an excellent sustainable location. Potential customers are able to take full advantage of nearby bus and rail facilities. Furthermore, customers will be able to take full advantage of the local amenities on offer in short walking or cycling distances away from the site which will reduce the reliance upon the private car.
- 7.4 Full service areas and facilities with turning provision have been provided for all units to enable service vehicles to exit the yards in a forward gear. The majority of the service yards have their own segregated access that is for service vehicles only. The exceptions are the A3 and units 38-41 which are accessed from the main Montrose Way access.
- 7.5 The traffic modelling shows that by implementing the new junctions and the proposed improvements along this network, the redevelopment of this site can be accommodated without any detriment to the operation of the highway. Significant benefits can be gained in terms of highway capacity and delay reductions as well as improvements to pedestrian safety through the provision of additional formal pedestrian crossing facilities.
- 7.6. Substantial decreases in queuing and degrees of saturation can be seen at the key junctions in this network, with particular improvements seen at the Edge Lane Drive / Edge Lane / Rathbone Road / St Oswald's Street junction.



- 7.7           As the development can be accommodated on the highway network with the delivery of improvements to existing junctions, in addition to the proposed new junctions, the benefits to the highway network as a result of this development are clear and it is concluded that there are no highway reasons why this development cannot be implemented.