Transport Assessment

Proposed Food Store Development
Blue Boar Lane, Sprowston,
Norwich

Prepared For: Lidl UK GmbH

July 2016

Doc Ref: CR/JRB/15138/TA/4
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1.0 INTRODUCTION

1.1 SCP have been appointed by Lidl UK GmbH to prepare this Transport Assessment (TA) in support of a planning application for a new discount food retail unit located on land off Blue Boar Lane roundabout junction, Sprowston. This TA can be read in conjunction with the Travel Plan (TP) which also accompanies the application.

1.2 This TA considers the planning application against local and Government policy and comments on the feasibility of the development with reference to transport and highway issues. It examines the accessibility of the site by public transport, foot, bicycle and car, both at present and if the development proposals were to be brought forward.

Scope and Structure of This Report

1.3 This report seeks to demonstrate that the proposed development of this site can be accommodated without detriment to the operational capacity or safety of the local highway network, and that it can be readily accessed on foot, by bicycle and by local public transport services.

1.4 The structure of this report is as follows:-

i) Chapter 2 - describes the site location, existing uses, local highway network, existing traffic conditions and road safety record;

ii) Chapter 3 - defines the development proposals including the proposed access off the retail access roundabout emanating from the Blue Boar Lane roundabout junction, servicing and car parking arrangements;

iii) Chapter 4 - summarises the national and local transport policies, and describes how the proposed development accords with these;

iv) Chapter 5 – considers the location of the site with regard to the existing local sustainable transport infrastructure;

v) Chapter 6 – estimates the number of base year and future year multimodal trips generated by the development, and the distribution and assignment of the vehicular trips on the local highway network;
vi) Chapter 7 - presents an assessment of the proposed development’s impact upon the operational performance of the local highway network;

vii) Chapter 8 - provides the summary and conclusions to this TA derived from the analysis presented in the above chapters.
2.0 EXISTING CONDITIONS

2.1 The proposed development site is situated to the north east of Sprowston and Norwich Town Centre, located on undeveloped land off the Blue Boar Lane roundabout, and the access road roundabout junction to an existing retail development.

2.2 The immediate surrounding land uses are dominated by existing residential properties to the west, newly constructed residential properties to the north, land allocated to new housing development in the east, and retail to the south.

2.3 The site is proposed to front onto the access road from the existing roundabout junction for the existing retail development which will form the site’s eastern boundary. The site is also bound by the access road leading to Blue Boar Lane roundabout to the south, and by undeveloped land to the north / west.

2.4 The undeveloped land currently occupies a total area of approximately 0.80 hectares. The location of the site in relation to its surroundings is shown below in its local context at Figure 2.1.

Figure 2.1 – Site Location – Local Context Plan
2.5 **Blue Boar Lane Roundabout Junction**

The Blue Boar Lane / Cranes Croft Road / Retail Access roundabout is located to the west of the site and takes the form of a four arm roundabout. All arms of the roundabout provide two lane entries with refuges which benefit from dropped kerbs and tactile paving to assist pedestrians.

2.6 Blue Boar Lane is a single carriageway road running in a north west to south east direction from its roundabout junction, and is subject to a mandatory 30mph speed limit. As well as a connection to the existing retail development, Blue Boar Lane also provides a linkage between the A1151 Wroxham Road and Salhouse Road.

2.7 Within the vicinity of the proposed site and the existing retail development Blue Boar Lane benefits from footways on both sides of the carriageway with street lighting, dropped kerbs and tactile paving at the roundabout junction. In addition, this section of Blue Boar Lane is a bus route with bus stop facilities provided within the existing retail development.

2.8 Furthermore, a signalised pedestrian crossing is also located immediately south of the existing retail development, providing pedestrian crossing facilities across Blue Boar Lane from the surrounding residential areas.

**Existing Retail Roundabout Junction**

2.9 The existing retail roundabout is located to the south of the site and takes the form of a four arm roundabout, however, one arm has not been built in full and therefore only three arms are in use. All arms benefit from pedestrian refuge islands with dropped kerbs and tactile paving.

2.10 At present, the existing roundabout only provides access to the existing retail development, with one arm for service deliveries only, one arm providing access to the retail development, and one arm linking to the Blue Boar Lane roundabout.

**Traffic Survey Data – Study Network Area**

2.11 SCP commissioned Weekday and Saturday peak period traffic count data for the following junctions:

- Blue Boar Lane Roundabout Junction
- Retail Roundabout Junction
2.12 Full classified turning counts were undertaken for the above study area on Friday 5th June 2015 during the hours of 15:00-18:00 for the PM peak. Additionally, full classified turning counts were also undertaken on Saturday the 6th June 2015 during the hours of 11.00-14.00. The count data is included in Appendix 1 for reference.

2.13 The raw data has been used to convert the traffic flows into passenger car units (pcu) for weekday and Saturday highway peak hours at the junctions within the study network. Analysis of this data highlighted the fact that the Peak Hour Flows occurred during 16:30 – 17:30 for the Weekday PM Peak, and 11:30 – 12:30 in the Saturday Peak. The representative flow diagrams are included in full within Appendix 1, and summarised in Table 2.1 below.

<table>
<thead>
<tr>
<th>All Vehicle Movements (PCUs) - Weekday PM</th>
<th>All Vehicle Movements (PCUs) - Saturday Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:00 - 16:00</td>
<td>11:00 - 12:00</td>
</tr>
<tr>
<td>15:15 - 16:15</td>
<td>11:15 - 12:15</td>
</tr>
<tr>
<td>15:30 - 16:30</td>
<td>11:30 - 12:30</td>
</tr>
<tr>
<td>15:45 - 16:45</td>
<td>11:45 - 12:45</td>
</tr>
<tr>
<td>16:00 - 17:00</td>
<td>12:00 - 13:00</td>
</tr>
<tr>
<td>16:15 - 17:15</td>
<td>12:15 - 13:15</td>
</tr>
<tr>
<td>16:30 - 17:30</td>
<td>12:30 - 13:30</td>
</tr>
<tr>
<td>16:45 - 17:45</td>
<td>12:45 - 13:45</td>
</tr>
<tr>
<td>17:00 - 18:00</td>
<td>13:00 - 14:00</td>
</tr>
</tbody>
</table>

2.14 Table 2.2 below summarises the average queues at the Blue Boar Lane Roundabout Junction.

<table>
<thead>
<tr>
<th>From:</th>
<th>Blue Boar Lane (N)</th>
<th>Retail Access Road</th>
<th>Blue Boar Lane (S)</th>
<th>Cranes Croft Road</th>
</tr>
</thead>
</table>
Average Queue Lengths (No. of PCUs) - Weekday PM (16:30 – 17:30)  
<table>
<thead>
<tr>
<th>Lane 1</th>
<th>Lane 2</th>
<th>Lane 1</th>
<th>Lane 2</th>
<th>Lane 1</th>
<th>Lane 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Average Queue Lengths (No. of PCUs) - Saturday (11:30 – 12:30)  
<table>
<thead>
<tr>
<th>Lane 1</th>
<th>Lane 2</th>
<th>Lane 1</th>
<th>Lane 2</th>
<th>Lane 1</th>
<th>Lane 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

2.15 It is evident from the table above that the Blue Boar Lane roundabout junction does not experience high levels of average queuing during the weekday and Saturday peak hours across all four arms.

2.16 The average queue lengths emanating from the Retail Access Road are currently only displaying queues of up to five PCUs during the peak periods. This level is considered to be more than adequate, and provides enough capacity to allow the junction to still fully operate with the proposed development traffic added to the network.

Road Safety

2.17 A review of personal-injury accidents (PIAs) recorded within close proximity to the proposed site access has been undertaken using the most recently available three year data from the Department for Transport (DfT) for the period of 1st January 2012 – 31st December 2014. Examination of the data revealed that two incidents have occurred over that period.

2.18 Table 2.3 below summarises the two incidents in proximity to the site over the most recent three year period.

Table 2.3 - Summary of Accident Analysis by Year

<table>
<thead>
<tr>
<th>Severity</th>
<th>2012-13</th>
<th>2013-14</th>
<th>2014-15</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slight</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Severe</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Fatal</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

2.19 Of the two incidents shown in Table 2.3 above, one was reported upon the Blue Boar Lane roundabout junction, and one was reported to the south of the site at the signalised pedestrian...
crossing, both incidents were recorded as resulting in severe injuries within the 2014-15 time frame.

2.20 The information available on the accidents above suggests that they were predominantly caused by driver error, and it is considered that the design of the highway layout was not a contributory factor in any of the reported PIAs.
Summary

2.21 The analysis presented above and illustrated in Figure 2.3 below suggests that the junctions within the study area do not have any significant highway safety problems. Therefore the existing accident record does not lead to any significant concerns or demonstrate any discernible pattern that could be affected by the development proposals.

Figure 2.3 – Accident Location Plan
3.0 PROPOSED DEVELOPMENT

3.1 The proposals for the application site include the construction of an A1 discount food retail unit, with a total retail floor area (RFA) of approximately 1,689sqm. The proposed site layout plan is contained in Appendix 2.

3.2 The store will take access from a new access road being constructed to serve the residential site beyond.

3.3 The proposals will include safe pedestrian linkages through the car park to the store from the adopted highway network.

3.4 The proposals are illustrated at 1:500 scale at Appendix 2.

Servicing

3.5 Deliveries to the store will be made by articulated lorry via the existing roundabout junction with the existing retail development. Drawing numbers SCP/15138/AVT01 and SCP/15138/AVT02 in Appendix 3 illustrates the swept path analysis of a 16.5m long articulated lorry entering the existing roundabout junction with the existing retail development, turning into the proposed discount food retail unit, manoeuvring within the proposed car park layout and reversing into the service area and then exiting the site in a forward gear via the site access.

3.6 As is typical with large vehicle movements, it is anticipated that an HGV would need to use the full width of the carriageway to perform some of the movements. However, it is anticipated that there will be just one dedicated delivery per average day sometimes two during peak times e.g. the Christmas period. Deliveries will typically take place outside the normal highway peak hours to minimise any disruption or conflict with customers.

Parking

Car Parking

3.7 A total of 120 car parking spaces will be provided on the site as part of the proposed development layout. The resultant parking ratio is one space per 21m² of gross floor area (GFA) due to the proposed store size of 2,526sqm GFA. This parking ratio is in line with the car parking standard set out in the Broadland District Council’s ‘Parking Standards Supplementary Planning Document (SPD)’ which states a maximum of 1 space per 14sqm of GFA should be provided (up to 180 spaces permitted).
3.8 Car park accumulation data for existing Lidl stores (average RFA of 1,286sqm) is also provided at Appendix 4 which shows that 120 spaces would be adequate to cater for predicted demand. 120 spaces would also be sufficient to accommodate demand during busier times of the year (for example, the peak summer and Christmas period).

3.9 Of the 120 spaces provided for the proposed discount-food store, seven will be designated to parent and child standard and six will be to mobility standard. These spaces will be clearly marked and positioned close to the store entrance for the customer’s convenience, as illustrated in the site layout within Appendix 2.

Cycle Parking

3.10 Broadland District Council’s cycle parking standards require one space per 100sqm gross floorspace for staff and one space per 200sqm gross floorspace for customers. This would equate to a minimum requirement of 25 and 13 cycle spaces for staff and customers respectively (38 cycle parking spaces in total).

3.11 Twelve Sheffield-type cycle stands will be provided within the store car park opposite the site access. These will provide short-stay cycle parking for up to 24 customers. Staff would be expected to park bikes within the warehouse for additional security.
4.0 TRANSPORT POLICY

General

4.1 This chapter provides a summary of relevant national and local transport policies and provides a brief analysis of how the proposed development contributes towards the aims and objectives of these policies.

National Policy – National Planning Policy Framework (NPPF)

4.2 National planning policy guidance on transport issues is contained in the NPPF. NPPF was published in March 2012 by the Department for Communities and Local Government, replacing numerous planning policy statements (PPS) and guidance notes (PPG) including PPG13 – Transport. The overall theme of the document is ‘achieving sustainable development’ which applies to all aspects of planning, including transport. In particular:-

“Transport policies have an important role to play in facilitating sustainable development but also in contributing to wider sustainability and health objectives. Smarter use of technologies can reduce the need to travel. The transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel.”

“Encouragement should be given to solutions which support reductions in greenhouse gas emissions and reduce congestion. In preparing Local Plans, local planning authorities should therefore support a pattern of development which, where reasonable to do so, facilitates the use of sustainable modes of transport.”

4.3 In reference to supporting documentation with planning applications, NPPF states that:-

“All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:

- the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;
- safe and suitable access to the site can be achieved for all people; and
- improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.”
4.4 In reference to the planning of developments, NPPF states that:-

“Plans and decisions should ensure developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised.”

“Plans should protect and exploit opportunities for the use of sustainable transport modes for the movement of goods or people. Therefore, developments should be located and designed where practical to:

- accommodate the efficient delivery of goods and supplies;
- give priority to pedestrian and cycle movements, and have access to high quality public transport facilities;
- create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones;
- incorporate facilities for charging plug-in and other ultra-low emission vehicles; and
- consider the needs of people with disabilities by all modes of transport.

A key tool to facilitate this will be a Travel Plan. All developments which generate significant amounts of movement should be required to provide a Travel Plan.

Planning policies should aim for a balance of land uses within their area so that people can be encouraged to minimise journey lengths for employment, shopping, leisure, education and other activities.

For larger scale residential developments in particular, planning policies should promote a mix of uses in order to provide opportunities to undertake day-to-day activities including work on site. Where practical, particularly within large-scale developments, key facilities such as primary schools and local shops should be located within walking distance of most properties.”

Broadland District Council Local Development Scheme (LDS) 2015 - 2020

4.5 Under the Planning and Compulsory Purchase Act 2004, the development plan will constitute a range of documents called Development Plan Documents or ‘Local Plans’. The Broadland Local Development Scheme is the necessary programme for the preparation of these local development documents; all of which have been reviewed below.
Local Transport Policy – Norfolk’s Transport Plan 2026

4.6 Norfolk’s 3rd Local Transport Plan (Connecting Norfolk) sets the longer term strategy for transport delivery up to 2026. It provides the policy framework for improvements to transport as well as being a guide for other agencies, like local planning authorities, when considering future development or delivery.

4.7 Norfolk’s Transport Vision is for ‘a transport system that allows residents and visitors a range of low carbon options to meet their transport needs and attracts and retains business investment in the county’

4.8 Six strategic aims underpin Connecting Norfolk’s vision:

- Delivering sustainable growth;
- Enhancing strategic connections;
- Reducing emissions;
- Improving road safety;
- And improving accessibility.

Joint Core Strategy – Broadland, Norwich and South Norfolk

4.9 The Joint Core Strategy (JCS) has been prepared by the three councils of Broadland, Norwich and South Norfolk and was adopted on 10 January 2014. The JCS sets out the long-term vision and objectives for the area, including strategic policies for steering and shaping development.

4.10 The JCS makes up a section of each council’s Local Development Framework (LDF); which will be a guide to future development and use of land in Broadland, Norwich and South Norfolk up to 2026.

4.11 The JCS aims to address the following challenges between 2008-2026:

- Enhancing the environment and mitigating against any adverse impacts of growth.
- Identifying land to meet requirements of providing additional homes;
- Securing new jobs of all types and levels in all sectors of the economy and for all the workforce;
• Maximising the high quality of life and respecting the patterns of living which characterise the area;
• Ensuring that essential infrastructure, services and community facilities are provided;

4.12 The JCS states that the transportation system will be enhanced to develop the role of Norwich as a Regional Transport Node, through the implementation of the Norwich Area Transportation Strategy, and will improve access to rural areas by:

• Significant improvement to the bus, cycling and walking network, including Bus Rapid Transit on key routes in the Norwich area.
• Promoting enhancement of rail services, including improved journey time and reliability to London and Cambridge, and innovative use of the local rail network;
• Continuing to improve public transport accessibility to and between main towns and key service centres.
• Concentration of development close to essential services and facilities to encourage walking and cycling as the primary means of travel with public transport for wider access.

4.13 The transport strategy will promote sustainable economic development, improve local quality of life, reduce the contribution to climate change, promote healthy travel choices and minimise the need to use the private car.

Sprowston Neighbourhood Plan

4.14 The Sprowston Town Council sets out the long-term vision and objectives for the neighbourhood area, including policies to help achieve this. The neighbourhood plan complements the planning documents such as the Joint Core Strategy, and conforms with the strategic policies within NPPF. It focuses on some key issues that are important for the local community such as;

• Identifying possible locations for redevelopment;
• Improvements to public realm;
• Defining areas where development should be limited; and
• Changes to transport infrastructure and supporting facilities

4.15 The Neighbourhood Plan seeks to address challenges with the environment, housing, employment, place making and infrastructure. Any developments should be constructed to the highest possible standards of design, enhancing the quality and distinctiveness of the area and
will bring improved infrastructure, services and facilities to benefit both the new and existing community.

4.16 The following relevant policies have been taken from the Neighbourhood Plan ‘Key Objectives’ that have been identified by the council in order to achieve the vision they have for the community:

- Investment at local employment locations to help create a stronger economy;
- Improved access to, from and within the area;
- To enhance the Wroxham Road local centre and build on its importance for key local services; and
- Sustainable transport options to include a network of safe and convenient pedestrian and cycle links and public transport.

**Norwich Area Transportation Strategy (NATS)**

4.17 The Norwich Area Transportation Strategy (NATS) has been existence for many years and has evolved over time to reflect changing national and local policies and current challenges. A review of NATS over the period 2002 to 2005 led to a strategy aimed at helping to deliver growth and resolve existing transport problems, protect the historic city and reduce the impact of traffic in urban and rural areas where rat running is prevalent and detrimental to those communities.

4.18 Preferred detailed package of measures required to deliver NATS was set out in the NATS Implementation Plan (NATS IP) adopted in 2007 and refreshed in 2013. This contains a number of key transport inventions that will support development. These interventions include the following:

- Capacity improvements at Postwick Junction;
- Northern Distributor Road (NDR);
- Expansion of Park and Ride Facilities;
- Bus Rapid Transit; and
- Enhancement of Core Bus Routes, Cycle Routes and Rail Routes

4.19 The main purpose of NATS is to improve public transport choices and connectivity within the city centre and to make it easier for walking and cycling. The scheme also aims to improve the public
realm, and the economic vitality of the business and retail centres, and to help reduce the conflict between vehicles and pedestrians / cyclists.

Analysis & Conclusions

4.20 In general, the national and local transport policies set out above follow similar themes and promote common aims. These are to provide sustainable development with good access to jobs and facilities, to encourage non-car modes of transport, to ensure that the highways impact of new developments is acceptable or mitigated against and to promote good site design with appropriate parking levels.

4.21 This TA demonstrates that these general transport policy aims can be met at the proposed Lidl store.

4.22 In terms of the location and accessibility of the store, it is located close to other shopping and leisure facilities, as well as being within easy walking distance of bus stops and routes from surrounding residential and industrial areas, from where it can reasonably expect to draw the majority of its custom and staff. The following chapter of this TA establishes that the site has good accessibility by all the major non-car modes of transport.

4.23 In terms of the highways and traffic impact of the scheme, chapters six and seven of this TA demonstrates that the level of traffic that will be generated by the site will not be of detriment to the local highway network.

4.24 In terms of the site layout itself, the previous chapter demonstrates that the site access, internal road layout and parking levels are appropriate for the location, scale and nature of the development.

4.25 The above analysis of relevant national, regional and local transport policies confirms that the proposed development is therefore compliant with relevant transport planning policies and can help contribute to their objectives.
5.0 ACCESSIBILITY

Walking

5.1 A walk distance of 2km is suggested as being able to replace short car journeys. The majority of Sprowston and the surrounding residential areas can be accessed within a 2km walk from the site. This demonstrates that, as is Lidl policy, employees from the local area will be able to access the site by foot. This also indicates that a significant proportion of potential customers will also be within an easy walk of the site.

5.2 As illustrated by Figure 5.1 below, the site is very accessible to a number of local amenities within a 2km including bus stops located within the existing retail development (approximately 150m) and Sprowston town centre allowing for combined trips to the site.

Figure 5.1 – Walk Accessibility; 2km

![Walk Accessibility Map](source: OpenStreetMapping)

5.3 In addition, it is clear from Figure 5.1 above that there are extensive residential areas within a 2km walk catchment area of the site, allowing for both customers and potential employees to access the proposed store by foot.
Cycling

5.4 The area surrounding the site benefits from a network of off-road shared pedestrian and cycle local routes along Wroxham Road. These provide links into the residential areas from the arterial highway network.

5.5 Short car journeys of up to 5km are considered replaceable by cycle journeys. A 5km isochrone from the site reaches the periphery of Norwich city centre and includes a large amount of the surrounding residential areas. Figure 5.2 below indicates the extent of area within the 5km isochrone.

Figure 5.2 – Cycle Accessibility; 5km

5.6 The existing cycle infrastructure around the proposed development site combined with the additional provision for cyclists made by Lidl will ensure that employees and customers alike will be easily able to access the proposed development by bike.
Public Transport

5.7 The nearest bus stops to the application site are located within the existing retail development approximately 150m to the south of the retail development roundabout junction. A summary of current bus routes past the site is provided in Table 5.1 below. Note the first and last bus times highlighted within the table relate to the stop at the existing retail development.

5.8 As mentioned there are good existing pedestrian links and crossing facilities around the access roundabout junction and into the existing retail development site and the bus stops.

5.9 A summary of the bus routes which serve the area is provided in Table 5.1:

Table 5.1 – Bus Services

<table>
<thead>
<tr>
<th>Service Number</th>
<th>Route Description</th>
<th>Max Frequency Monday to Saturday</th>
<th>First Bus</th>
<th>Last Bus</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Sprowston – Norfolk &amp; Norwich Hospital (via Norwich city centre)</td>
<td>30 mins</td>
<td>0525</td>
<td>2217</td>
</tr>
<tr>
<td></td>
<td>Norfolk &amp; Norwich Hospital (via Norwich city centre) – Sprowston</td>
<td>30 mins</td>
<td>0610</td>
<td>2020</td>
</tr>
<tr>
<td>12</td>
<td>Wroxham - Norfolk &amp; Norwich Hospital via city centre (via Sprowston)</td>
<td>60 mins</td>
<td>0707</td>
<td>1752</td>
</tr>
<tr>
<td></td>
<td>Norfolk &amp; Norwich Hospital via city centre (via Sprowston) – Wroxham</td>
<td>60 mins</td>
<td>0756</td>
<td>1755</td>
</tr>
</tbody>
</table>

Source: FirstGroup

5.10 It is noted that bus service 11 also provides a 30 minute frequency service from Sprowston to Norfolk & Norwich Hospital (via Norwich city centre) on Sundays, operating between the approximate hours of 0800 and 2000.

5.11 This demonstrates that the development site is well located to benefit from frequent bus services to allow staff to access the site for work purposes without relying on the private car.

5.12 The nearest rail station to the site is Norwich approximately 5.5km away. The station is served by services from London, from Ely in Cambridgeshire and Great Yarmouth amongst others.

Summary

5.13 Having regard to the above, it is therefore considered that the site has an excellent level of accessibility by all the main non-car modes of transport. Access to the site by foot and cycle is of a good standard whilst there are bus stops with regular bus services nearby with regular services within easy distance of the site.
6.0 TRIP GENERATION, TRAFFIC DISTRIBUTION AND ASSIGNMENT

6.1 This chapter provides an estimation of the likely trip-generating potential of the proposed site uses during the weekday PM, and Saturday peak hours. The assessment is based on those peak hours when the combination of development-related traffic and local highway peak traffic are highest, in order to present a robust, worst-case scenario.

6.2 The estimated distribution and assignment of development-related traffic and background traffic growth forecasts (to the assessment year of 2021) are also set out.

Existing-Use Trip Generation

6.3 The traffic counts undertaken in June 2015 at the roundabout junctions of Blue Boar Lane and the existing retail development roundabout provides the flows generated within the study area during the weekday PM and Saturday peak hours.

Proposed discount food store Trip Generation

6.4 In order to present a robust set of capacity assessments later in this TA, trip rates based on other existing Lidl stores with a similar RFA have been used. The average trip rate (per 100sqm RFA) has been calculated from the existing Lidl stores for both the weekday and Saturday, as shown in Appendix 4.

6.5 Table 6.1 below provides a summary of the weekday PM and Saturday hourly peak trip rates from the site.

Table 6.1 – Weekday PM and Saturday Peak Hour Trip Rates (per 100m² RFA)

<table>
<thead>
<tr>
<th>Similar Lidl Stores</th>
<th>Weekday PM Peak Hour</th>
<th>Saturday Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arrivals</td>
<td>Departures</td>
</tr>
<tr>
<td>Vehicles</td>
<td>7.485</td>
<td>8.080</td>
</tr>
</tbody>
</table>

6.6 The estimated trip generation associated with the proposed discounted food retail unit during the weekday PM and Saturday peak hours have been calculated on the basis of the discount food retail RFA (1,689m²); see Table 6.2 below.
### Table 6.2 – Estimated Weekday PM and Saturday Peak Hour Trips

<table>
<thead>
<tr>
<th>Discount Food Retail</th>
<th>Estimated Weekday PM and Saturday Peak Hour Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,689sqm RFA</td>
<td>Weekday PM Peak Hour</td>
</tr>
<tr>
<td></td>
<td>Arrivals</td>
</tr>
<tr>
<td></td>
<td>Arrivals</td>
</tr>
<tr>
<td>Vehicles</td>
<td>126</td>
</tr>
</tbody>
</table>

### Trip Types

6.7 Research has shown that the vast majority of trips associated with the new discounted food retail developments are not ‘new’ but are transferred or diverted to the facility, as discussed in the TRICS Research Report 95/2. Up to 95% of trips to new food store facilities are actually existing car trips already on the highway network.

6.8 From established research, typical proportions of trip types are summarised in **Table 6.3**:

### Table 6.3 – Typical Trip Type Proportions

<table>
<thead>
<tr>
<th>Typical Trip Type Proportions</th>
<th>Research Source</th>
<th>Range of Each Trip Type (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>New</td>
</tr>
<tr>
<td>Dickinson &amp; Maclver</td>
<td>0 to 7</td>
<td>27 to 56</td>
</tr>
<tr>
<td>Maclver &amp; Dickinson</td>
<td>-</td>
<td>55 to 66</td>
</tr>
<tr>
<td>Hazel &amp; Maclver</td>
<td>1 to 3</td>
<td>27 to 47</td>
</tr>
<tr>
<td>Shaw</td>
<td>47 to 65</td>
<td>10 to 37</td>
</tr>
<tr>
<td>Harris &amp; McCoy</td>
<td>40 to 61</td>
<td>3 to 6</td>
</tr>
<tr>
<td>JMP</td>
<td>62 to 64</td>
<td>36 to 38</td>
</tr>
</tbody>
</table>

6.9 The general trend is therefore for the following (**Table 6.4**) approximate proportions of trip types:

### Table 6.4

<table>
<thead>
<tr>
<th>Concluded Trip Type Proportions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trip Type</td>
</tr>
<tr>
<td>New</td>
</tr>
<tr>
<td>Transfer</td>
</tr>
<tr>
<td>Pass-by</td>
</tr>
<tr>
<td>Diverted</td>
</tr>
</tbody>
</table>
6.10 For the purposes of this assessment, and given the scale of the study area, only ‘new’ and ‘pass-by’ trips have been assessed with the following assumptions:

i) **New (primary) trips:** new trips for the purpose of this analysis will include all transfer trips and any diverted trips from outside the study area. It is therefore considered that new trips will account for a robust 70% of the expected net generated trips. These are assigned according to the trip distribution percentages in Appendix 5 which represent the current traffic behaviour at Blue Boar Lane / existing retail access road.

ii) **Pass-by trips:** It is assumed that all pass-by trips will originate from traffic routing from the Blue Boar Lane. These passing flow trips are therefore adjusted to account for the changes in traffic movements. The pass-by trips have been assumed to account for 30% of the expected net generated trips.

**Trip Distribution and Assignment**

6.11 The estimated distribution of development-related traffic is based on the proportions of traffic currently passing the site observed in the traffic surveys (Appendix 5). These proportions have been used as a proxy for assigning all ‘new’ primary trips. The trip distributions are illustrated in Appendix 5.

6.12 The ‘pass-by’ trips have been taken from the proportions of arrivals at site access junction, but then distributed in the same proportions on departure from the site. The trip distributions are again illustrated in Appendix 5.

6.13 The resultant generated traffic distributed on the local highway network is indicated within Appendix 5.

**Background Traffic Growth**

6.14 In accordance with the DfT’s “Guidance on Transport Assessment”, the future assessment year for this TA is 2021 (i.e. year of application +5 years).

6.15 TEMPRO v6.2 has been used to calculate background traffic growth from the survey year of 2015 when the initial construction will commence, and then through to the design year of 2021.

6.16 The growth factors that have been obtained from TEMPRO are summarised in Table 6.5 below.

**Table 6.5 – Growth Factors**
6.17 The assessment flows for 2021 are therefore - the baseline at 2021, plus the ‘new’ development flows. These flows are included in the traffic flow diagrams in Appendix 5, and are summarised in Tables 6.6 and 6.7 below.

**Table 6.6 – Weekday PM Peak Derivation of Link Flows along Blue Boar Lane**

<table>
<thead>
<tr>
<th>From</th>
<th>Survey Year 2015 Base Weekday PM Peak Flow (16:30-17:30)</th>
<th>Future Year 2021 Weekday PM Peak Flow (16:30-17:30)</th>
<th>Future Year 2021 + New Development Weekday PM Peak Flow (16:30-17:30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Boar Lane West (Wroxham Road)</td>
<td>732</td>
<td>797</td>
<td>851</td>
</tr>
<tr>
<td>Blue Boar Lane East</td>
<td>785</td>
<td>854</td>
<td>888</td>
</tr>
<tr>
<td><strong>TOTAL (2-WAY)</strong></td>
<td><strong>1517</strong></td>
<td><strong>1651</strong></td>
<td><strong>1739</strong></td>
</tr>
</tbody>
</table>
Table 6.7 – Saturday Peak Derivation of Link Flows along Blue Boar Lane

<table>
<thead>
<tr>
<th>From</th>
<th>Survey Year 2015 Base Saturday Peak Flow (11:30-12:30)</th>
<th>Future Year 2021 Saturday Peak Flow (11:30-12:30)</th>
<th>Future Year 2021 + New Development Saturday Peak Flow (11:30-12:30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Boar Lane West (Wroxham Road)</td>
<td>711</td>
<td>770</td>
<td>851</td>
</tr>
<tr>
<td>Blue Boar Lane East</td>
<td>594</td>
<td>643</td>
<td>689</td>
</tr>
<tr>
<td>TOTAL (2-WAY)</td>
<td>1305</td>
<td>1413</td>
<td>1540</td>
</tr>
</tbody>
</table>

6.18 As can be seen in Tables 6.6 and 6.7 above, in the future year 2021 plus new development, the weekday PM peak hour flows are predicted to increase by 88 vehicles (two-way), when compared to the baseline future year 2021 assessment. Volumetrically this only equates to approximately one additional vehicle every 40 seconds or so in the weekday PM peak. For the Saturday assessment period with the same comparison assessment, the development is predicted to increase total two-way traffic flows by 127 vehicles, which equates to approximately one additional vehicle every 30 seconds in the Saturday peak.
7.0 JUNCTION CAPACITY ASSESSMENTS

7.1 This chapter summarises the results of the detailed assessments of the anticipated capacity of the local highway network between the Blue Boar Lane roundabout junction, and the retail development roundabout junction with the proposed access road in place to estimate conditions for when the proposed site is operational. The capacity of both roundabout junctions has therefore been assessed for the baseline 2021 plus the development scenario.

Assessment Methodology

7.2 Assessments of the roundabout junctions within the study area have been undertaken using Junctions 9 (ARCADY) software. With the Junctions 9 models the results generated provide a Ratio to Flow capacity (RFC) along with an estimate of the likely traffic queues. RFC values between 0.00 and 0.85 are generally accepted as representing stable and acceptable operating conditions. Values between 0.85 and one and represents variable operation (i.e. possible queues building up at the junction during the peak period under consideration and increases in vehicular delay moving through the junction). RFC values in excess of one represents overloaded conditions (i.e. congested conditions).

Blue Boar Lane Roundabout Junction

7.3 Junctions 9 ARCADY software has been used in the assessment of the existing layout of the Blue Boar Lane / Retail Access Road / Cranes Croft Road Roundabout. The ARCADY results are presented in Appendix 6 with the results summarised in Table 7.1 below.
7.4 The above results demonstrate that all arms of the Blue Boar Lane roundabout are predicted to operate within capacity in both the 2021 base scenario, and the 2021 Base + Development scenario with the proposed development in place.

### Retail Development Roundabout Junction

7.5 Junctions 9 ARCADY software has been used in the assessment of the proposed layout of the Retail Access Road (towards Blue Boar Lane) / Retail Access Road Roundabout / Retail Delivery Only Access Road / Proposed Lidl Access Road. The ARCADY results are presented in Appendix 6 with the results summarised in Table 7.2 below.

#### Table 7.1 – Blue Boar Lane Roundabout Junction – 2021 Base + Development ARCADY Results

<table>
<thead>
<tr>
<th>Arm</th>
<th>Weekday PM Peak</th>
<th>Saturday Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Queue (PCU)</td>
<td>RFC</td>
</tr>
<tr>
<td>Existing Layout - 2021 Base Scenario</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retail Access Road</td>
<td>1.5</td>
<td>0.61</td>
</tr>
<tr>
<td>Blue Boar Lane (SE)</td>
<td>3.4</td>
<td>0.78</td>
</tr>
<tr>
<td>Cranes Croft Road</td>
<td>0.0</td>
<td>0.02</td>
</tr>
<tr>
<td>Blue Boar Lane (NW)</td>
<td>1.8</td>
<td>0.64</td>
</tr>
<tr>
<td>Existing Layout - 2021 Base + Development Scenario</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retail Access Road</td>
<td>2.4</td>
<td>0.71</td>
</tr>
<tr>
<td>Blue Boar Lane (SE)</td>
<td>5.0</td>
<td>0.84</td>
</tr>
<tr>
<td>Cranes Croft Road</td>
<td>0.0</td>
<td>0.03</td>
</tr>
<tr>
<td>Blue Boar Lane (NW)</td>
<td>2.3</td>
<td>0.70</td>
</tr>
</tbody>
</table>

#### Table 7.2 – Retail Development Roundabout – 2021 Base + Development ARCADY Results

<table>
<thead>
<tr>
<th>Arm</th>
<th>Weekday PM Peak</th>
<th>Saturday Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Queue (PCU)</td>
<td>RFC</td>
</tr>
<tr>
<td>Proposed Layout – 2021 Base + Development Scenario</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retail Delivery Only Access Road</td>
<td>0.0</td>
<td>0.00</td>
</tr>
<tr>
<td>Retail Delivery Access Road</td>
<td>1.0</td>
<td>0.49</td>
</tr>
<tr>
<td>Link to Blue Boar Lane</td>
<td>0.6</td>
<td>0.39</td>
</tr>
<tr>
<td>Proposed Lidl Access Road</td>
<td>0.2</td>
<td>0.15</td>
</tr>
</tbody>
</table>
7.6 The above results demonstrate that all arms of the retail development roundabout are predicted to operate within capacity in both the 2021 base scenario, and the 2021 Base + Development scenario with the proposed development in place. There is abundant spare capacity on the arm serving Lidl (its ratio of flow to capacity never exceeds 20%) and this demonstrates that it is sufficient to serve both Lidl and the future residential development coming on stream on adjacent land.

Summary

7.7 It is evident from the above assessments of the local highway network within the study area that the proposals to develop the discount food retail site poses no significant threat to either existing or forecast capacity on the local highway network.

7.8 It is therefore considered that the proposed development will not have a material impact on the operation of these roundabout junctions and that it can be adequately accommodated by the existing local highway infrastructure.
8.0 SUMMARY & CONCLUSIONS

8.1 SCP have been appointed by Lidl UK GmbH to prepare this Transport Assessment (TA) in support of a planning application for a discount food retail unit located on land off Blue Boar Lane roundabout junction, Sprowston. This TA can be read in conjunction with the Travel Plan (TP) which also accompanies the application.

8.2 The proposals for the application site include the construction of an A1 discount food retail unit, with a total retail floor area (RFA) of approximately 1,689sqm. The store will take access from a new access road emanating from the roundabout junction with the existing Tesco superstore to the south. This access road will also serve residential development on land to the north and east of Lidl.

8.3 Having examined the most recent three year safety records for the period of 1st January 2012 – 31st December 2014, the data revealed that two incidents have occurred over that period. Of those two incidents one was reported upon the Blue Boar Lane roundabout junction, and one was reported to the south of the site at the signalised pedestrian crossing, both incidents were recorded as resulting in severe injuries within the 2014-15 time frame.

8.4 The analysis undertaken within the study area illustrates that the existing accident data does not lead to any significant concerns or demonstrate any discernible pattern along the highway network / junctions that could be affected by the development proposals. Therefore SCP do not consider road safety to present a material concern in the context of the development proposals.

8.5 SCP have carried out a review of the accessibility of the site by walking, cycling and public transport modes of transport. It is considered that the site has a good level of accessibility. Pedestrian crossing points are located immediately either side of the existing retail roundabout junction. There are also bus stops within 150m walking distance with regular bus services available.

8.6 Deliveries to the store will be made by articulated lorry via the existing site access. Swept path analyses indicate that a 16.5m long HGV will be able to satisfactorily enter, service, turn within and exit the site in a forward gear. It is anticipated that there will be one to two dedicated deliveries per day, sometimes three during peak times e.g. the Christmas period. Lidl will aim to ensure these movements occur during off-peak periods to therefore minimise any disruption to the local network and to customers.

8.7 A total of 120 car parking spaces will be provided on the site as part of the proposed development layout. The 120 spaces provide a parking ratio of circa one space per 21m² GFA. This parking
ratio is in line with the parking standards set out in the Broadland District Council’s ‘Parking Standards Supplementary Planning Document (SPD)’.

8.8 Cycle parking will also be provided in broad accordance with Broadland District Council’s parking standards. A minimum of 24 cycle spaces will be provided for customers with staff being able to park their bikes within the warehouse of the new store.

8.9 Of the 120 spaces provided for the proposed discount-food store, seven will be designated to parent and child standard and six will be to mobility standard.

8.10 The traffic associated with the proposed store has been estimated using trip rates based on other existing Lidl stores with a similar RFA. The average trip rate was calculated from recent surveys of existing Lidl stores for both the weekday and Saturday and distributed and assigned onto the local highway network based on the proportions of existing traffic observed during recent traffic surveys.

8.11 The capacity of the existing roundabout junctions (Blue Boar Lane roundabout junction & the Retail Development roundabout junction) has been assessed in detail from the survey year of 2015 up to the design year of 2021. The detailed assessments indicate that the both roundabout junctions will operate satisfactorily with the proposed development in place at 2021.

8.12 It is therefore concluded that the proposed discount food retail site meets local and national transport policy objectives in terms of accessibility and sustainability. We therefore consider there to be no reason to refuse the current application for the proposed discount food retail located on land off Blue Boar Lane roundabout junction on highways grounds.