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Prepared on behalf of

Howarth Timber Ltd

Springfields Building Supplies
A5104, Chester Road, Broughton, Chester.

Proposed Extensions and Associated Works

Transport Statement

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Acknowledgements:

Crashmap has been used to assess the accident history on the local highway network;

The TRICS database has been used to calculate vehicle trip rates;

Google maps and Ordnance Survey map data has been utilised within this report.

Disclaimer

The methodology adopted and the sources of information used by Sanderson Associates (Consulting Engineers) Ltd in providing its services are outlined within this Report.

Any information provided by third parties and referred to herein has not been checked or verified by Sanderson Associates (Consulting Engineers) Ltd, unless otherwise expressly stated within this report.

This report was checked and approved on the 10 July 2019 and the Report is therefore valid on this date, circumstances, regulations and professional standards do change which could subsequently affect the validity of this Report.

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1 Introduction

1.1 Sanderson Associates (Consulting Engineers) Ltd has been appointed by Howarth Timber Ltd to advise on the traffic and transportation issues surrounding their proposals to construct an extension to an existing building and changes to the external storage areas on land at Springfields Building Supplies, Chester Road (A5104), Broughton, Chester, Flintshire, CH4 0DH. The extension will create a new shop and display area together with warehouse facilities. The location of the application site is shown on **Figure 1 (Appendix A)** to the rear of this report.

1.2 National Policy

1.2.1 National policy for Wales is contained in the document Planning Policy Wales (PPW) (Edition 9, November 2016).

1.2.2 National planning policy on highway and transport matters is provided in PPW Chapter 8: Transport as well as Technical Advice Note (TAN) 18: Transport (2007). The latter provides guidance to Local Authorities about integrating land use and transport planning and explains how transport impacts should be assessed and mitigated.

It provides advice on:-

- Integration between land use planning and transport
- Location of development
- Parking
- Design of development
- Walking and cycling
- Public transport
- Planning for transport infrastructure
- Assessing impacts and managing implementation

1.3 Local Planning Policy

1.3.1 Local policy is provided in the Flintshire Unitary Development Plan (FUDP). The FUDP is the adopted development plan for the 15-year period 2000 – 2015. The aim of the FUDP is to provide a framework for making rational and consistent decisions on planning applications and to guide development to appropriate locations. Whilst the adopted UDP became time expired at the end of 2015 it remains the adopted development plan for the County. Therefore, regard will need to be taken in ensuring that the Plan is compliant with up to date Welsh Government guidance in Planning Policy Wales, Technical Advice Notes and any other relevant guidance.

1.3.2 The Council is now embarking on the preparation of a Local Development Plan (LDP) for the County. The Council will be consulting upon the Deposit Plan in September 2019. The LDP focuses on delivering sustainable development in the County for a 15 year period 2015 to 2030 and will include:

- policies which will guide decisions on planning applications.
- proposals for the development of housing, retail, employment and other land uses.
- policies which seek the protection and enhancement of the natural and built environment.

1.3.3 The Wales Transport Strategy *One Wales: Connecting the nation* has the goal to "promote sustainable transport networks that safeguard the environment while strengthening our country's economic and social life". Through planning, the document seeks to "influence and alter travel patterns, promote sustainable travel and contribute to environmental improvements".

1.3.4 In accordance with the above guidance, this Transport Statement will consider the following aspects:

- the local highway network and its road traffic accident record.

- the access arrangements to the proposed building supplies premise.
- the existing site.
- the proposed development and its operational characteristics.
- the impact of the development on the local highway network in terms of highway safety.
- accessibility of the site in relation to sustainable transport and local facilities and means to encourage the use of sustainable transport.

1.4 Planning Consultations

1.4.1 Pre-application submission discussions have taken place with the Local Planning Authority (Flintshire County Council) regarding the development proposals. The Council have provided a written response and consider polices AC13 – Access together with Traffic Impact and Policy AC18 – Parking Provision and New Development are relevant in respect of highway and transportation matters. The Council's Highway Development Control Manager has been consulted and provided the following comments:-

"A Builder's Merchants falls within a Class A1 use for which the maximum parking standards suggest the provision of 1 parking space per 20m2 GFA. Based on the use class relative to the proposed GFA's it is clear that proposed parking provision will fall significantly short of that proposed. As part of any subsequent planning application, the parking shortfall will therefore require further thought and a statement justifying the deficit should be provided. I suggest that the Agent starts by considering the existing site and parking demand during peak periods. In addition, parking for delivery vehicles stored on the site should be identified in conjunction with staff numbers as existing and proposed relative to staff parking provision.

A 26m diameter turning circle for Articulated Heavy Goods Vehicles should also be shown to be provided and protected within the site in addition to facilities for the loading and unloading of delivery vehicles. It is noted that the description includes the erection of new perimeter fencing and access alterations. It is advised that the

access alterations should include for improved visibility from the point of access. The adjoining class A Highway is subject to a 40mph speed restriction which requires visibility splays of 2.4m x 120m, measured in both directions along the nearside channel line.

However, if this can't be achieved over land within the control of the Highway Authority and/or Application site, then the sightlines should be shown to be maximised across the site's frontage with the highway in order to facilitate the development. The perimeter fence being shown to set back set back behind the sightlines.

It is also noted that the proposal also includes an improved access. It is assumed that this is required to facilitate the movement of larger vehicles into and from the site. In order to ensure this is fit for purpose, swept paths for an articulated HGV through the access should be modelled and used to inform the access design / geometry. Depending on the information that is submitted, it is also likely that the vehicular footway crossing serving the existing site shall be deemed unsuitable to serve the expansion of the business.

Furthermore, the access improvements should include for the access gate being set back into the site at least 7m in order to accommodate a vehicle (car / small van) clear of the adjoining highway whilst the gate is opened / closed. "

1.4.2 In summary the pre-application advice indicates:-

In summary, it is considered that the general principle *of the proposed extension /remodelling of the existing building suppliers is acceptable in accord with the planning policy framework. If however it is decided to proceed with the submission of a formal planning application this would need to be accompanied by both a Highway Transport Plan, and Flood Consequences Assessment (FCA) given its location within a C1 Flood Zone in order to confirm acceptability of the proposed development as in the absence of information it is not possible for this to be established at this stage.*

2 Existing Situation

2.1 Site and Surrounding Area

2.1.1 The application site is presently operated as a building supplies merchant – Springfields Building Supplies. The application site is located outside the settlement boundary of Bretton / Broughton which are to the south west of the site and the boundary abuts The Glynne Arms Public House to the west. The Airbus factory complex surrounds the site to the north and east with the A5104 Chester Road to the south. The application site is in close proximity to Broughton Shopping Park with lays to the south. Abutting the eastern boundary is a building which is presently used for administrative purposes by the business and has a surfaced area for parking which could accommodate approximately 9 spaces accessed from Chester Road. The location of the application site is shown on the Location Plan **(Appendix B)** to the rear of this report.

2.1.2 The application site presently comprises of 3 buildings and external storage areas and aggregate bins. One building is a small storage building approximately 60.6sqm (which will be demolished) and the largest building (approx. 502 sqm) on the site is used for warehousing and storage of materials. This will also be demolished. The third building is the shop and counter with an external floor area of 183.2sqm which will be extended. The total site area inclusive of the buildings is 6,255 sqm with 7 marked parking spaces. Access is direct from Chester Road and is 6.46m wide between the existing gate posts with a double leaf gate some 3.06m from the kerb line. Photograph A below shows the existing parking area.

Photograph A – Parking Area

2.1.3 The existing opening hours of the builder's merchants are 07:30 - 17:00 Monday to Thursday, 07:30 - 16:00 on Friday and Saturday 08:00 – 12:00 (noon). There are 7 staff employed at the site.

2.2 Local Highway Network

2.2.1 Chester Road is a single carriageway road which is subject to a 40mph speed limit and is provided with street lighting. Approximately 280m to the west is a large roundabout which provides access to the Broughton Shopping Park to the south and an access to the Airbus complex to the north. The A5104 continues to the west. Approximately 255m to the east there is a signalised 'T' junction serving the Airbus complex with a left turn diverge lane and is provided with kerbed central islands in the A5104 carriageway and hatched markings.

2.2.2 The Chester Road carriageway is typically 8.3m wide flanked by a footway on the northern side some 1.9m to 2.0m wide to the existing boundary fence and a verge of 3.3m width on the southern side. There is a vehicular access to an unused

building opposite the site access. On the northern side of the carriageway is a mandatory cycle lane marking approximately 1m wide. The 2 photographs (B & C) below show the general alignment of the kerb line and the access on Chester Road.

Photograph B – Chester Road Looking West From the Existing Access

Photograph C – Chester Road Looking West Passed Site

2.3 Accident History

2.3.1 Personal injury accident data has been obtained from the Crashmap online database. The data identifies that there have been no incidents in the last 5 year period 2014 to 2108. An extract from Crashmap is shown below.

Figure 2.3.1 – Crashmap Extract – Incidents in the last 5 years

2.4 Speed Survey

2.4.1 A radar vehicle speed survey was undertaken on Friday 14th June 2019 to record free-flow vehicle speeds of vehicles travelling eastbound towards the site along Chester Road. The speed of vehicles was measured approximately 120m from the site access with a dry road surface. A full copy of the results is included at **Appendix C**.

2.4.2 The speed survey found that the 85th percentile wet weather speed of vehicles was 33mph. The resulting visibility requirements based on guidance contained within Manual for Streets 2 (MfS2) and using the DMRB parameters would require 90m visibility. Based on the speed limit of 40mph DMRB recommends 120m visibility.

2.4.3 The level of vision potentially available for the existing access point from Chester Road has been assessed and this is considered to be 2.4m x 120m to the east and 2.4m x 120m to the west. However, the existing fence on the frontage impinges into the sight line. Improvements to visibility are proposed.

3 Proposed Development

3.1 Proposed development

3.1.1 It is proposed to develop the site retaining the existing shop and counter building which will be extended to provide new warehouse and storage. Two existing buildings of approximately 562 sqm external floor area will be demolished and the external storage area re-arranged providing 5 aggregate bins, storage racking and 13 parking spaces.

3.1.2 A copy of the Architects site layout plan (see **Appendix B**) is attached to this report and shows the overall development plot, a parking facility providing 15 standard parking spaces and 6 parking spaces for vans. Cycle parking for the proposals can be provided. The overall proposed external building area is 1,439sqm with approximately 183 sqm of this being the existing shop / counter building. The net increase in building floor area is 694 sqm taking into account the existing building floor areas that will be demolished. In terms of the building merchants use of the site the main difference is the change from external storage to internal storage. In practice the range of products and materials that could be sold would be the same whether the new building floor area was provided or not. The proposed opening hours are 07:00 - 17:00 Monday to Thursday, 07:00 - 16:00 on Friday and Saturday 08:00 – 12:00 (noon). The proposed level of staff is 9.

3.2 Access Visibility

3.2.1 The existing access will be improved and widened to 9.04m with the access centre line moved slightly to the east and a gate for security provided. The gate will be left open during opening hours. The level of vision for the proposed access point from Chester Road has been considered based on the results from the speed survey in section 2. The visibility sight lines that could be achieved for the amended access point are considered to be 2.4m x 120m to the east and 2.4m x 120m to the west. It is proposed that the existing fence is set back behind the visibility sight line and.

3.2.2 Drawing 11054-001 within **Appendix B** shows the proposed access arrangement and the visibility sight lines.

3.3 Deliveries and Servicing

3.4 It is envisaged that the timber and building supplies merchants will generate 6 large service vehicle deliveries per day (rigid and articulated) with approximately 12 deliveries to customers per day. Adequate space will be provided within the site to allow service vehicles to manoeuvre and exit the site in a forward gear. A turning circle is shown on the Architects Layout plan. Typically two large vehicles will be parked on site overnight. Drawing 11054-002 within **Appendix B** shows swept path diagrams for a 16.5m articulated vehicle accessing the site.

3.5 Parking

3.5.1 Parking policy on new development is provided in the Council's adopted Supplementary Planning Guidance No 11 - Parking Standards. The existing use does not compare with the land use types listed in Table 1. The highway officer in the planning pre-application compared the use to class A1 shops (non-food retail and supermarkets) with a ratio of 1 car space per 20 sqm gross floor area. Applying this to the proposed floor area of 1,439 sqm suggests a maximum of 72 spaces which is not considered comparable to the existing use.

3.5.2 Given that a large part of the building extension is for the storage of building products the parking standard for use class B8 Storage as also been considered. The ratio is 1 car space per 100 sqm gross floor area which would result in a maximum of 14 spaces. The existing parking ratio is 1 space per 106 sqm (745 sqm / 7 spaces). The proposals include for 15 marked parking spaces together with parking for 6 vans. Given the use there are other areas where vehicles can wait for the collection of building materials. It is therefore considered that the proposals include for sufficient parking.

4 Accessibility by Non-Car Travel Modes

4.1 Overview

4.1.1 This section includes an assessment of the accessibility of the site by sustainable modes of transport, to review the opportunities that exist for staff and visitors to the site.

4.1.2 This section of the report considers the accessibility of the development by the following modes of transport:

- Accessibility on foot
- Accessibility by cycle
- Accessibility by bus
- Accessibility by rail

4.1.3 The non-car accessibility of the site is important to provide a viable alternative to the private car when considering travel to the site.

4.2 Accessibility on Foot

4.2.1 Walking is the most common form of travel in Britain and has the greatest potential to replace short car trips, particularly those under 2km.

4.2.2 It is important to consider the routes that would be taken to get to these locations as well as the distance. Department for Transport guidance 'Building Sustainable Transport into New Developments' (2008) gives the following advice.

"Walkable neighbourhoods are typically characterised as having a range of facilities within 10 minutes walking distance (around 800m). However, the propensity to walk or cycle is not only influenced by distance but also the quality of the experience; people may be willing to walk or cycle further where their surroundings are more attractive, safe and stimulating."

4.2.3 In terms of pedestrian infrastructure, along the northern flank of Chester Road, from the site frontage towards Broughton, a street-lit footway is provided with dropped kerbs to aid pedestrian movements. Approximately 130m to the west of the site access a footway also begins on the southern flank. At the A5104 roundabout junction splitter islands are provided with dropped kerbs and tactile paving. To the east of the site, the footway becomes a shared foot/cycleway and signal-controlled crossings are present to aid movements across the access to the large aerospace factory.

4.2.4 Facilities and amenities are located within 800m of the site include:

- Bus stops on Chester Road and within Broughton Shopping Park
- Broughton Shopping Park including Tesco Extra store and food establishments
- Aldi supermarket
- The New Glynne Arms public house

4.2.5 Residential areas located within 2km of the site include:

- Broughton
- Bretton

4.2.6 Figure 4.2.6 below identifies 800m and 2km walking radii from the site. It is noted that walking routes will not follow the simple radius of this plan and it is provided as an indication of where destinations lie and the general extent to which the local area can be accessed on foot.

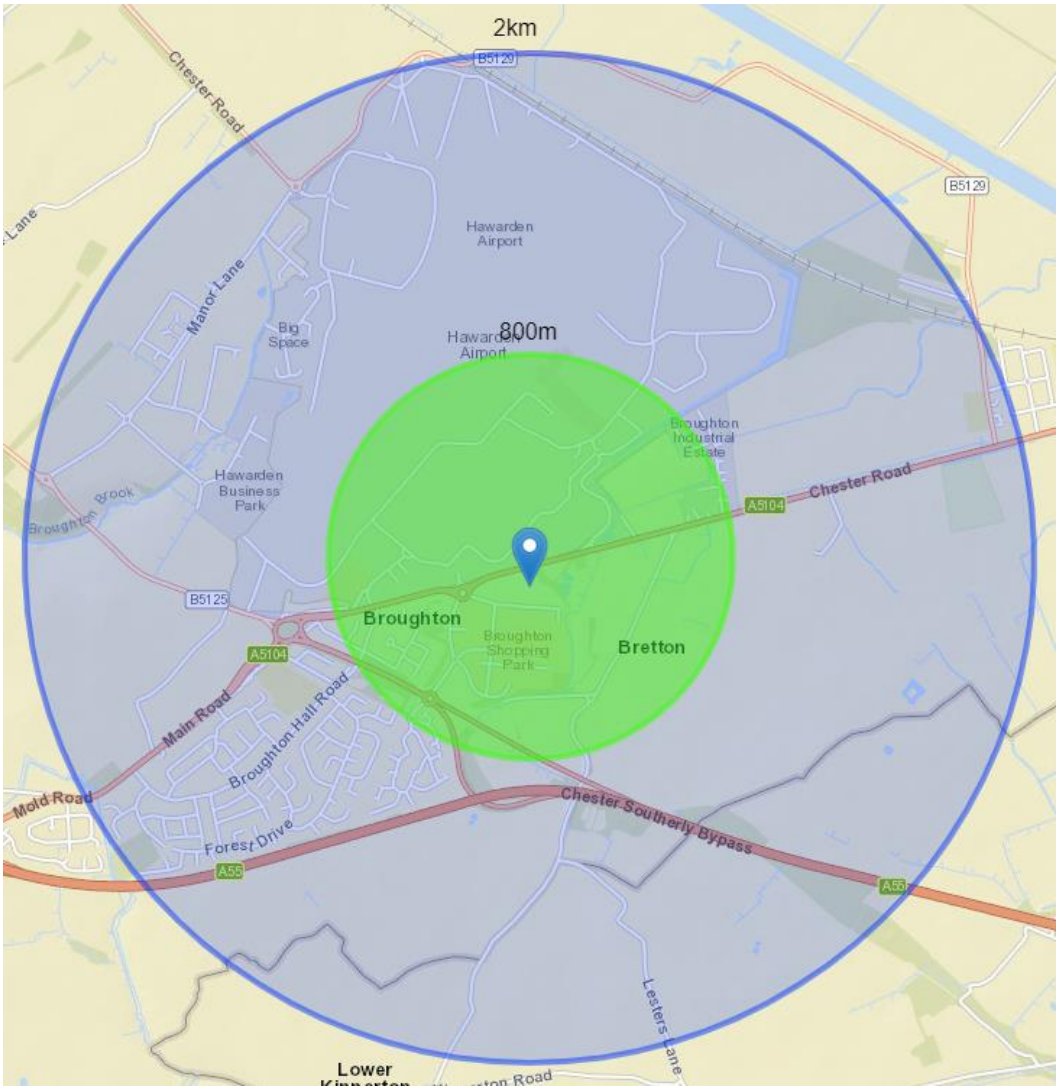


Figure 4.2.6 – Indicative walking distances (National Geographic Map Maker)

4.3 Accessibility by Cycle

4.3.1 Like walking, cycling has an important part to play in reducing congestion, improving accessibility and reducing pollution. A further benefit of cycling is linked to increased general health and fitness which has personal benefits as well as economic benefits for the nation in terms of health service costs. The bicycle is generally more affordable than the car and hence there are social equity benefits to the promotion of cycling. Cycling may also allow people without cars to reach destinations that they may otherwise be unable to reach.

4.3.2 It was indicated in PPG13 (2001) that "cycling has the potential to substitute for short car trips, particularly those under 5km and to form part of a longer journey by public transport". However, 'Building Sustainable Transport into New Developments' (2008) identifies that "people may be willing to walk or cycle further where their surroundings are more attractive, safe and stimulating". Furthermore, the National Travel Survey identifies longer cycle journeys than 5km with an average distance of 5.3km and an 85th percentile distance of 7.4km.

4.3.3 Destinations located within 7.5km of the site are given below:

Origin/Destination	***Distance***
Bretton	1.0km
Broughton	2.0km
Saltney Ferry	2.3km
Saltney	3.0km
Hawarden	4.7km
Hawarden Train Station	4.8km
Lache	5.3km
Penymynydd	5.5km
Handbridge	6.4km

4.3.4 The figure overleaf indicates destinations that lie within 5km and 7.5km radii of the application site. Again it is noted that cycling will not follow the simple radius shown on this plan and it is provided to give an indication of where destinations lie and the general extent to which the site is accessible by cycle.

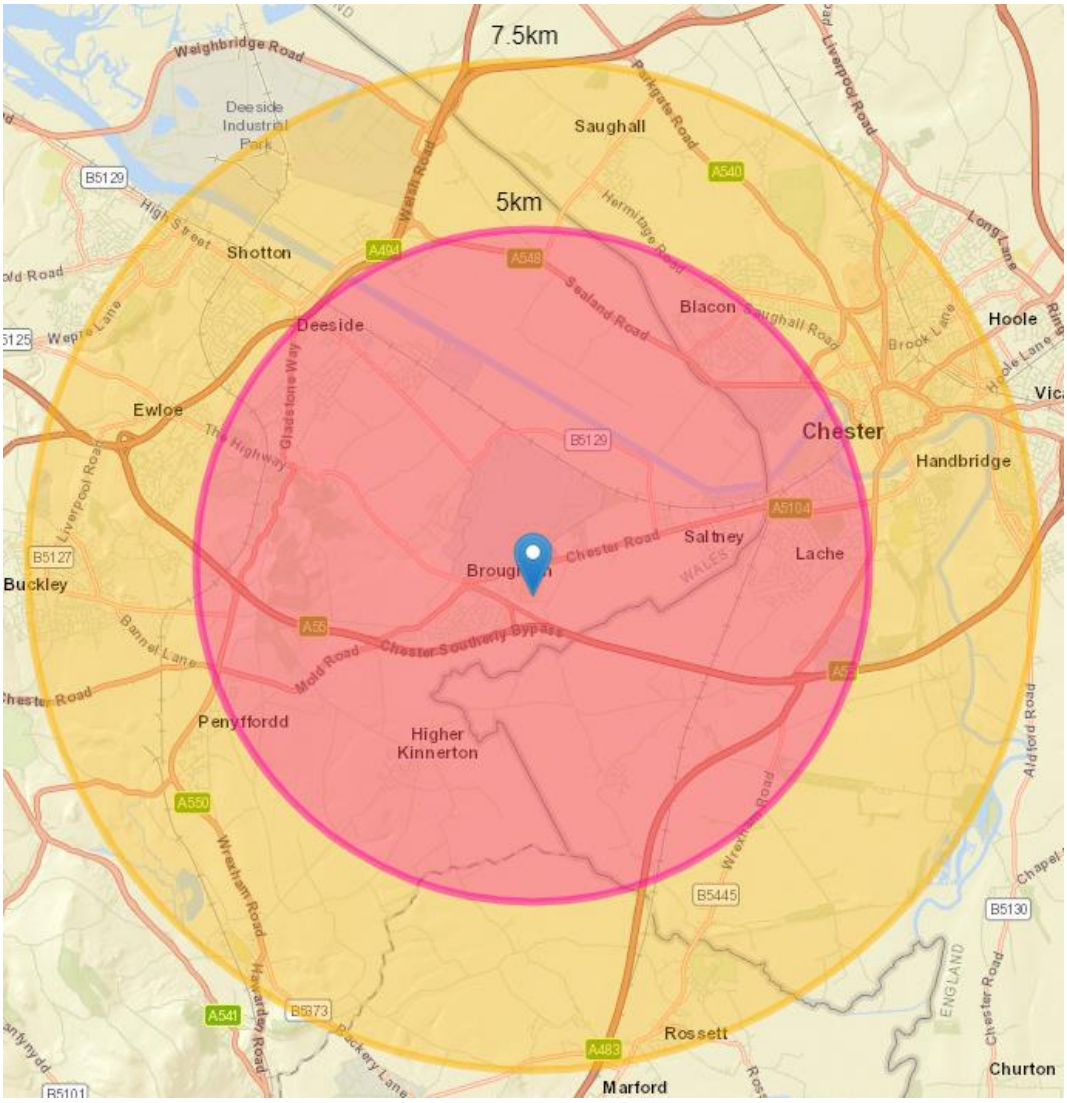


Figure 4.3.4 – Indicative cycling distances (National Geographic Map Maker)

4.3.5 However, as with walking, it is considered that the quality of the available infrastructure is an important factor when it comes to accessibility. The following extract from cyclestreets.net shows the available cycle routes in the vicinity of the site;

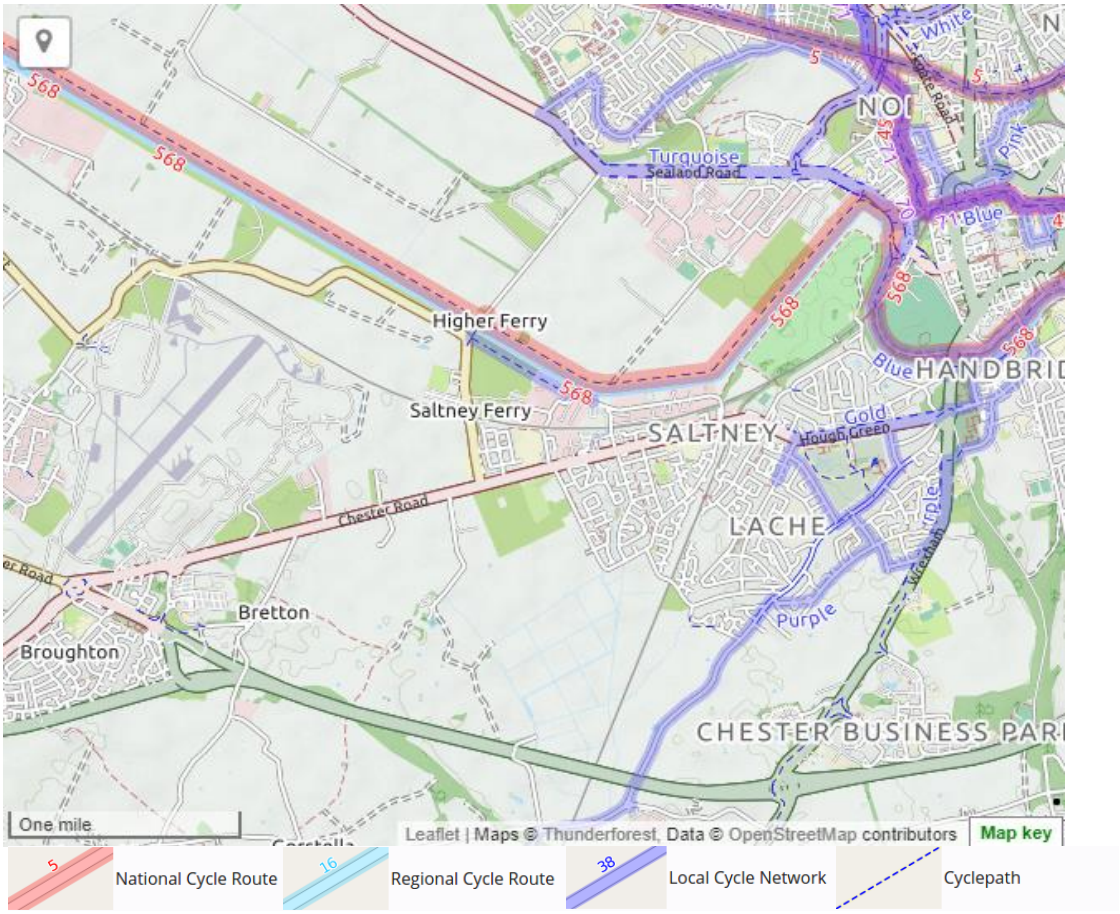


Figure 4.3.5 – Cycle routes in the vicinity of the site (cyclestreets.net)

4.3.6 In addition, approximately 35m to the east of the site the footway becomes a shared foot/cycleway that, although discontinuous, continues towards Chester providing cyclists with a partially off-road route.

4.4 Accessibility by Bus

4.4.1 The nearest bus stops to the site are located on Chester Road at a distance of approximately 95-135m to the west of the site access. Further services are available from stops located within Broughton Shopping Park at a distance of approximately 430-460m. The location of these stops are shown on the figure below.

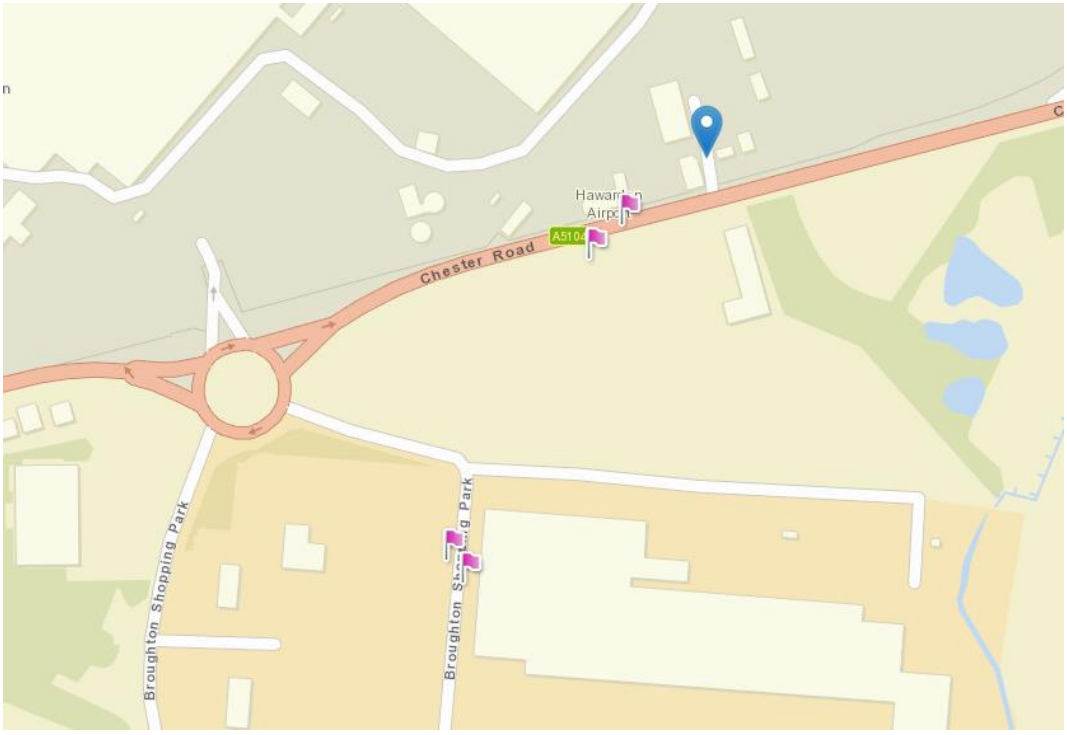


Figure 4.4.1 – Location of nearest bus stops (National Geographic Map Maker)

4.4.2 Details of the facilities and services available at the stops are given below:

Chester Road

Stop reference:	fliagjp
Distance from site access:	Approximately 95m
Facilities:	Pole with flag and timetable information
Services:	4/4S, 11/11A, 13, X1

Stop reference:	fliagap
Distance from site access:	Approximately 135m
Facilities:	Pole with flag and timetable information
Services:	4/4S, 11/11A, 13, X1

Broughton Shopping Park

Stop reference:	fliagdg
Distance from site access:	Approximately 430m
Facilities:	Bus shelters with timetable information and seating, layby with road markings
Services:	4/4S, 11/11A, 13, CT1, X1, X4

Stop reference:	fliagjm
Distance from site access:	Approximately 460m
Facilities:	Bus shelters with timetable information and seating, layby with road markings
Services:	4/4S, 11/11A, 13, 811, LT6, X1, X4

4.4.3 A summary of the bus services provided is given below:

		Approximate Peak Frequency		
Service	**Route**	**Mon - Sat Daytime**	**Mon - Sat Evening**	**Sunday**
4/4S	Chester – Mold	30 mins	60 mins	30-60 mins
11/11A	Chester – Rhyl (connecting at Holywell)	30 mins	30-120 mins	120 mins
13	Chester – Mold (Evenings Chester – Broughton Shopping Park only)	30-60 mins	30-60mins	No service
811	Broughton – Deeside Industrial Park	M-F only 3 services AM to Broughton 2 services PM to Deeside	No service	No service
CT1	Caergwrle – Broughton	120 mins	No service	No service
LT6	Penyffordd – Broughton Retail Park	2 services each way (Tu, Th & Sa only)	No service	No service
X1	Ruthin – Chester	2 services each way	No service	No service
X4	Chester – Mold	30 mins	No service	No service

Table 4.4.3 – Summary of bus services

4.4.4 As can be seen above, there are a variety of bus services that connect to major towns and cities including Chester, Wrexham and Mold where a wide range of options for onward travel exist.

4.5 Accessibility by Rail

4.5.1 The closest rail station to the site is Hawarden located at a distance of approximately 4.8km. This is a local station that provides hourly services between Wrexham and Bidston as well as 8 cycle parking spaces.

4.5.2 Chester Station is located at a greater distance of 8.2km however provides an increased number and variety of services. The station provides 76 cycle storage spaces however, for increased ease of access, a number of the buses detailed in section 4.4 provide services to the station.

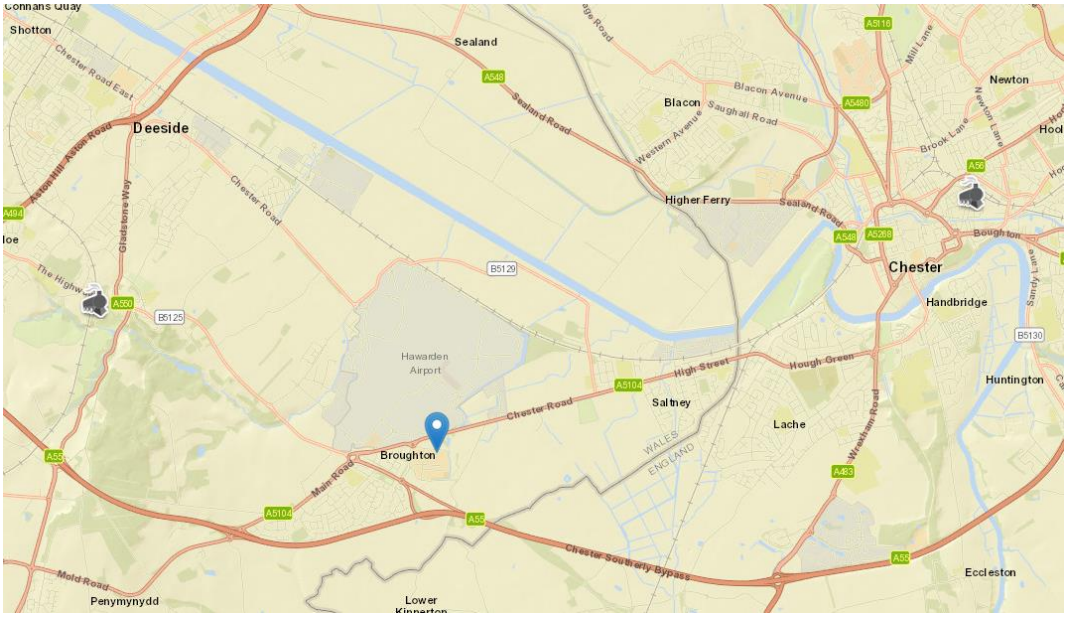


Figure 4.5.2 – Location of nearest train stations (National Geographic Map Maker)

4.5.3 The rail services available from Chester Station connect to destinations including Liverpool, Birmingham, London, Manchester, Crewe and Llandundo as well as other destinations on route.

4.6 Accessibility Summary

4.6.1 Whilst the opportunities for access by active and rail transport are not extensive, the site is well located for travel by bus with a variety of services available. Therefore, it is considered that the site is in an accessible location, where there are alternative means of transport to the private car that will allow staff to travel to work sustainably.

5 Multi Modal Trip Generation

5.1 This section provides an estimation of the Multi Modal trip rates and potential level of person trip generation by all modes of travel resulting from the development proposals as required by TAN18: Transport. Vehicular trips are assessed separately in Section 6 of this report. The person trips to the application site for the additional floor space has been assessed, using information contained within the TRICS 7.6.1 database. This is based on using the trip rates applied to the new floor space although in practice there is no change to the range of products and materials that could be stocked and GFA floor area parameter used by TRICS. The full TRICS outputs are contained in **Appendix E** of this report.

5.2 The TRICS database has been used to assess the Multi Modal trips to the development for the new floor space. The land use and category 01 Retail L – Builder's Merchants has been used to determine person trip rates for the development. There are only 3 multimodal surveys held in the TRICS database. The main survey selection search parameters used for Multimodal surveys are as follows:-

Selected Regions and Areas: Greater London and Ireland excluded

Parameter: GFA (m²) – the Builders Merchants category includes both internal floor space and external space that is accessible by staff and visitors excluding landscaping.

Actual Range: 5,000–6,275 sqm

Date Range: 01/01/09 – 19/10/11

Selected Survey Days: Monday – Friday, 3 days (Mon 2 days, Wed 1 day)

Selected Locations: Suburban Area and Edge of Town

5.3 The following provides details of the Multi Modal two-way trip rates along with the corresponding modal percentage split and generated trips. Trip rates for the

weekday AM/PM peak periods and a 24 hour modal trip rate have been considered:

5.4 The total people trips have been assessed for the new floor space and this is summarised in the table below.

Two Way Trips	Trip Rate (Per 100m²)	Percentage	694m²
AM Peak Hour (0800 – 0900)			
Pedestrians	0.000	0.0%	0
Cyclists	0.000	0.0%	0
Public Transport	0.042	2.7%	0
Vehicle Occupants	1.517	97.3%	11
Total People	1.559	100.0%	11
PM Peak Hour (1700 – 1800)			
Pedestrians	0.024	4.9%	0
Cyclist	0.000	0.0%	0
Public Transport	0.006	1.2%	0
Vehicle Occupants	0.456	93.8%	3
Total People	0.486	100.0%	3
24 Hour			
Pedestrians	0.315	2.0%	2
Cyclists	0.036	0.2%	0
Public Transport	0.204	1.3%	1
Vehicle Occupants	15.169	96.5%	105
Total People	15.720	100.0%	109

Table 5.4 :- Predicted Total Person Modal Split for the proposed development

*** minimum value of 1**

5.5 The actual peak hour demand from the development for walking, cycling and public transport is modest and at a level which can readily be accommodated within the existing infrastructure provision and public transport arrangements.

6 Traffic generations and impact

6.1 The TRICS database v7.6.1 has been utilised to estimate the likely traffic generated by the proposed residential development. The land use / category 01 – Retail L Builder's Merchants has been used to calculate the potential traffic generated by the proposed increased floor area. The net new floor space on the site is 694 sqm although the actual building floor area would be 1,439 sqm. The total area of the site inclusive of the building areas and external storage is 6,255 sqm.

6.2 The TRICS database has been used to assess the vehicular trips to the development for the new floor space. The land use 01 Retail, Category L – Builder's Merchants has been used. The main survey selection search parameters used for vehicle surveys are as follows:-

Selected Regions and Areas: Greater London and Ireland excluded

Parameter: GFA (m^2) – the Builders Merchants category includes both internal floor space and external space that is accessible by staff and visitors excluding landscaping.

Actual Range: 5,000–12,966 sqm

Date Range: 01/01/09 – 11/06/13

Selected Survey Days: Monday – Friday, 5 days (Mon 3 days, Tues 1 day, Wed 1 day)

Selected Locations: Suburban Area, Edge of Town Centre and Edge of Town

6.3 The resultant traffic generation for the proposed new internal floor area is tabulated below for the typical network peaks in the AM, PM and Daily periods. Full copies of the TRICS output are included in **Appendix F** of this report.

	Trip Rate Per Dwelling		Traffic Generations		
	Arrivals	Departure	Arrivals	Departure	Total
0800-0900	0.531	0.41	4	3	7
1700-1800	0.075	0.175	1	1	2
Daily	4.748	4.863	33	34	67

Table 6.3: Proposed Development (694m²)

6.4 The proposed new floor space could result in 7 vehicle movements (two way) in the AM peak, which equates to one vehicle every 8.6 minutes and 2 vehicle movements (two way) in the PM peak.

6.5 This is based on using the trip rates applied to the new floor space although in practice there is no change to the range of products and materials that could be stocked and the GFA floor area parameter used by TRICS includes both internal and external areas. This level of movement is considered low with regard to the likely traffic flows on Chester Road and would not be noticeable against normal variations in peak hour traffic which can be in the order of 10% for a principal road such as Chester Road. It can be seen that PM peak hour flows are very low reflecting typical opening hours for this type of use and since the site opens at 0730 staff would tend to arrive before the morning peak highway period.

6.6 In conclusion it is considered that the peak hour traffic generations for the proposed additional floor space would not materially adversely impact on Chester Road.

7 Summary and Conclusions

7.1 Sanderson Associates (Consulting Engineers) Ltd has been appointed by Howarth Timber Ltd to advise on the traffic and transportation issues surrounding their proposals to construct an extension to an existing building and changes to the external storage areas on land at Springfields Building Supplies, Chester Road (A5104), Broughton.

7.2 It is considered that the proposal will have no material impact on highway safety and the personal injury accident assessment has concluded that there are no specific areas of concern which would necessitate intervention or improvement as a result of the application proposals being implemented.

7.3 The site will be provided with an improved vehicular access via the A5104 Chester Road.

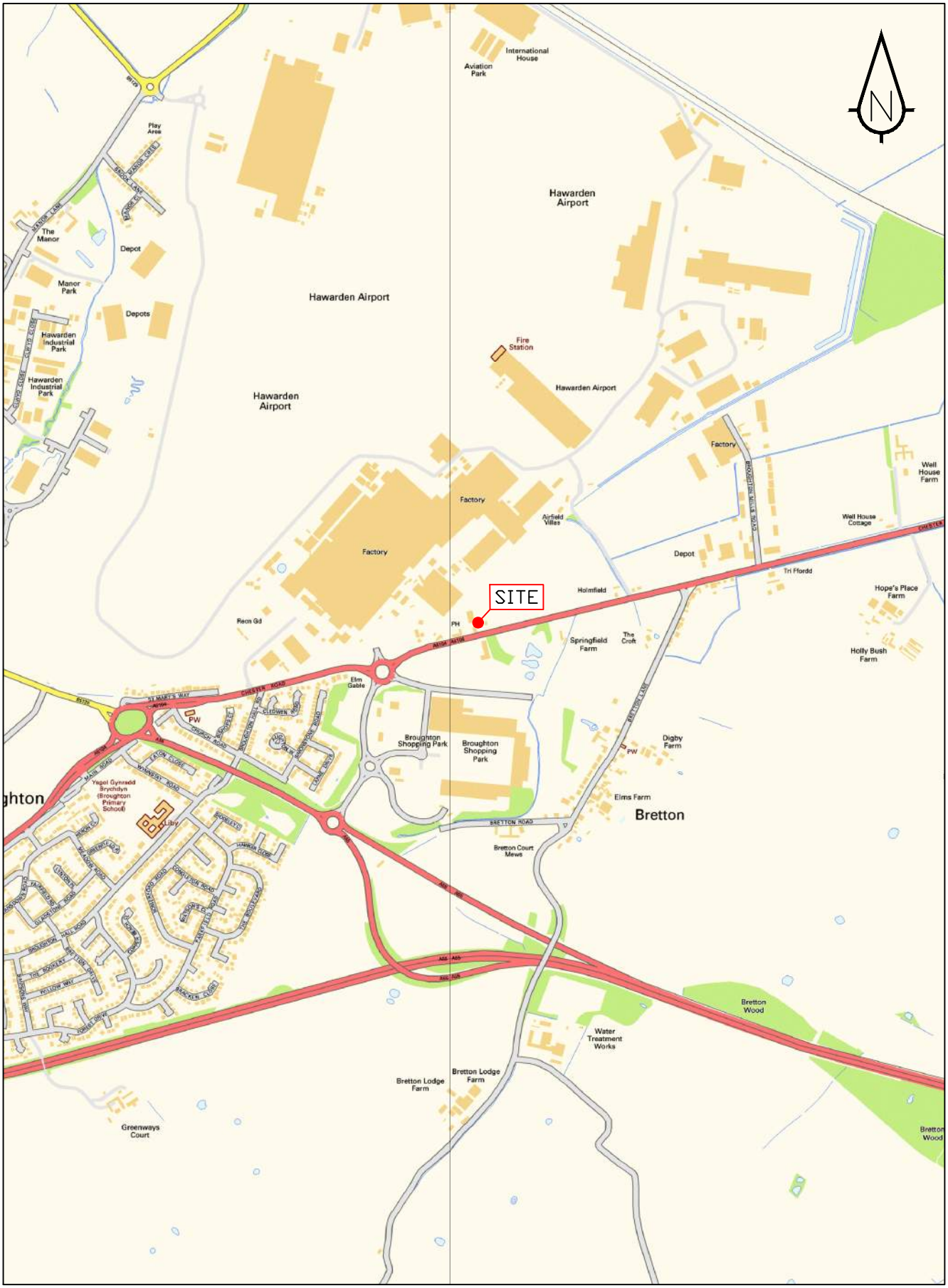
7.4 It is considered that walking, cycling and public transport offer possible modes of transport for staff and visitors of the application site. Walking, cycling and public transport have the potential to form part of a longer journey using linked trips.

7.5 From the predicted traffic flows in Section 6, it has been identified that the new floor space could generate 7 two way movements in the AM peak and 2 two way movements in the PM peak.

7.6 In conclusion, this report has demonstrated that there are no highway reasons why the application proposals for the new floor space at the existing Timber and Building Supplies Merchants on land off the A5104 Chester Road, Broughton should not be granted planning consent.

APPENDIX A

Figure 1 – Site Location Plan



sanderson associates (consulting engineers) ltd Highways | Traffic | Transportation | Water T 01924 844080 mail@sandersonassociates.co.uk F 01924 844081 www.sandersonassociates.co.uk	Site Location Plan	Drawn: CH	Scale: NTS
		Checked: DJC	Date: June 2019
	Springfield Building Supplies A5104 Chester Road, Broughton Chester	Approved: DJC	Drawing Number: Figure 1
			Size: A4

APPENDIX B

Location Plan

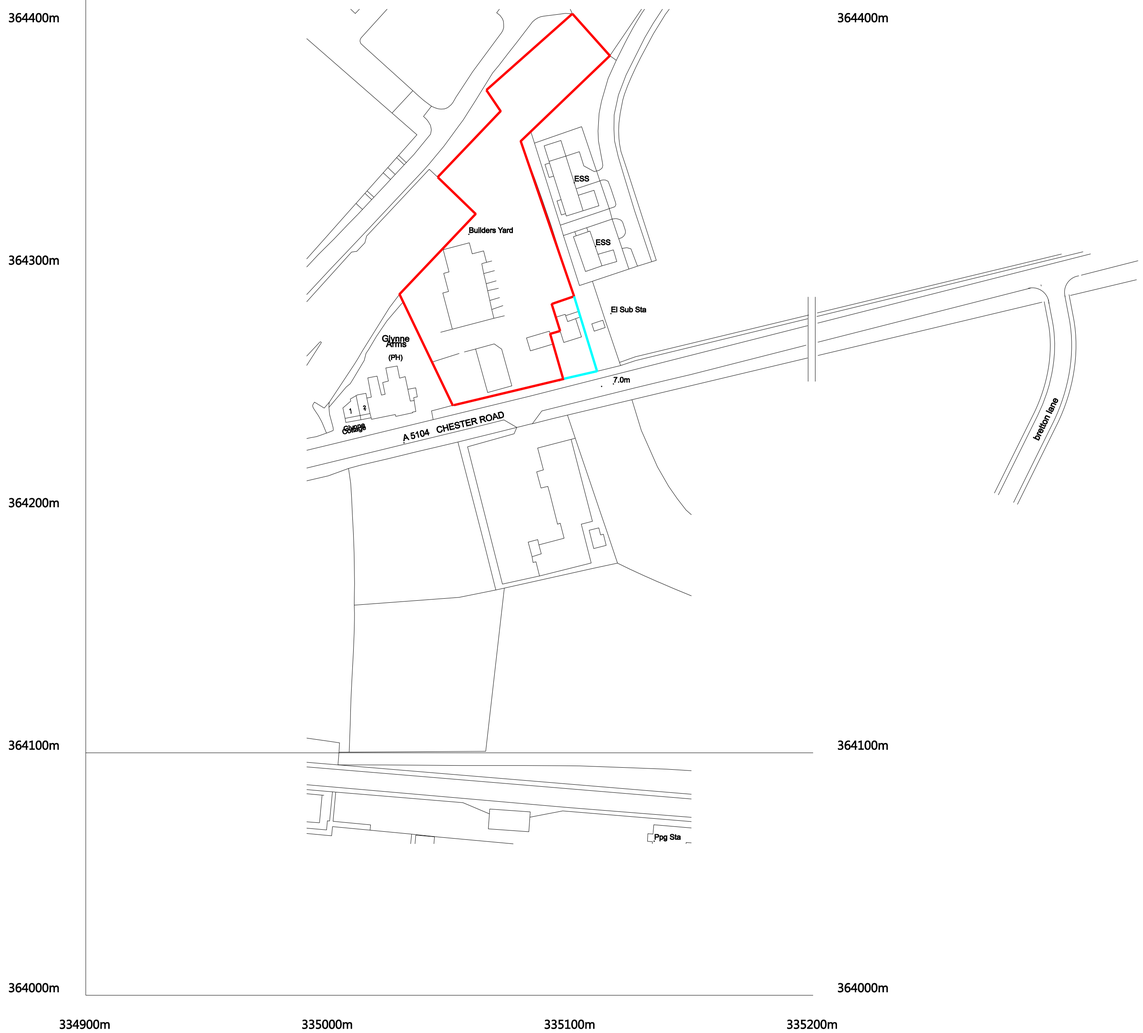
Proposed Site Layout

Drawing Reference: 11054/001 – Proposed Visibility Sight Lines

Drawing Reference: 11054/002 – Swept Path Analysis Max Legal (UK) Articulated Vehicle (16.5m)

ALL DIMENSIONS TO BE VERIFIED
ON SITE AND THE
ARCHITECT INFORMED
OF ANY DISCREPANCY.

REVISION DATE



NORTH

PILGRIM
Associates

UNIT 5. NILE MILL A.
FIELDS NEW ROAD
CHADDERTON.
OLDHAM.
GREATER MANCHESTER
OL9 8NH
TEL & FAX: 0161 627 1536

CHARTERED ARCHITECTS
CHARTERED SURVEYORS

HOWARTH TIMBER LTD
CHESTER ROAD
STRETTON
CH4 0DH

DRAWN DATE SCALE
1. 1250 AT A1 JAN 2019

LOCATION PLAN

DRAWING NO.
2036-36

Site layout 17122018.dwg

Bulk bags

Turning circle

Aggegate bays

skip

Paving

Blocks

Bricks

C/L racking

Heavyside display area

Car park

Bag store

Mill

Insulation

Insulation

Sheets

Van parking

Bulk storage

Sheets

Sheets

Doors

Van parking

PSE's

Van parking

shop entrance

demolish store

display

undesignated use

display

car park

sales

wc canteen

enlarge entrance

car park

public house

shop front to road

General Notes

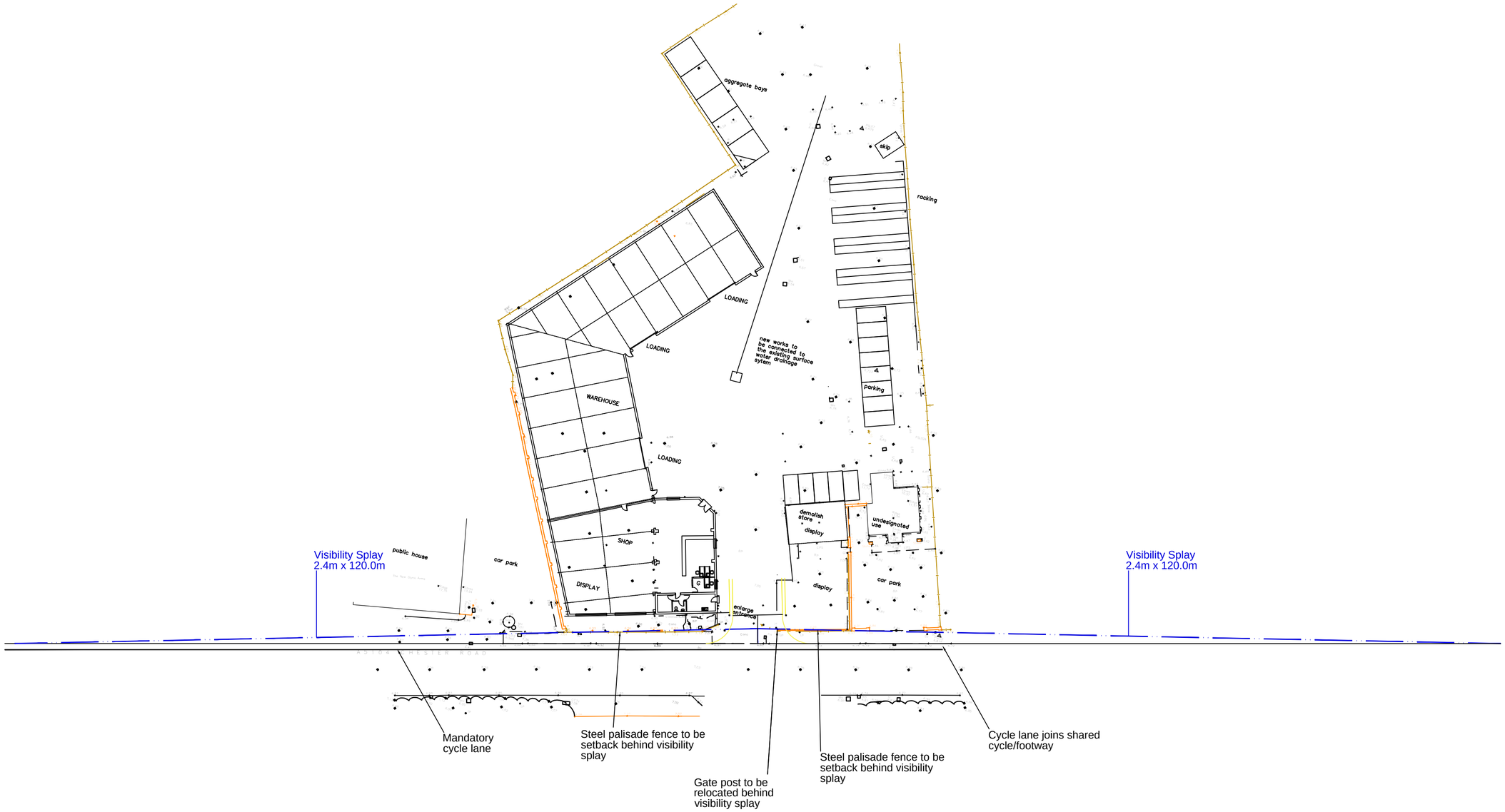
Site proposal

No.	Revision/Issue	Date

Firm Name and Address
David Welsh
DGW solutions LTD
07801070189
david@dgw-solutions.co.uk

Project Name and Address
Howarth Timber and Building Supplies
Chester

Project	Sheet
Chester	1
Date: 17/12/2018	
Scale: Not to scale	



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F 01924 844081 www.sandersonassociates.co.uk

Client
Howarth Timber Group Ltd

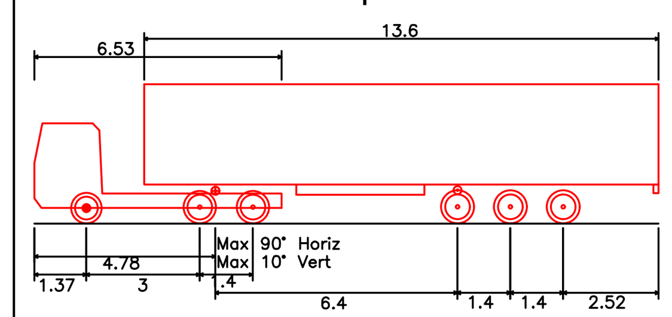
Project Title
Springfield Building Supplies
A5104 Chester Road,
Broughton, Chester

Drawing Title
Proposed Visibility Splays

Rev	Amendment	Drawn	Date	Checked
A	Amendments to proposed site access	LOB	28/06/19	LOB

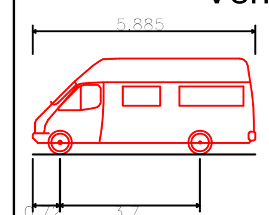
Scale 1:500		Drawn By	LOB
Drawing Size A2		Checked By	DJC
Date 24/06/19		Approved By	DJC
	Drawing Number 11054-001		Rev A

Vehicle Specification



Max Legal Length (UK) Articulated Vehicle (16.5m)	
Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.500m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.530m

Vehicle Specification



4.6t Light Van	
Overall Length	5.885m
Overall Width	2.000m
Overall Body Height	2.526m
Min Body Ground Clearance	0.299m
Track Width	1.765m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	6.000m

Rev	Amendment	Drawn	Date	Checked
B	Amendments to tracking	AA	10/07/19	DJC
A	Amendments to proposed site access	LOB	28/06/19	LOB

sanderson® associates (consulting engineers) ltd
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F 01924 844081 www.sandersonassociates.co.uk

Client
Howarth Timber Group Ltd

Project Title
Springfield Buildings Supplies
A5104 Chester Road
Broughton, Chester

Drawing Title
Swept Path Analysis
Max Legal (UK) Articulated Vehicle (16.5m)

Scale	Drawn By
1:250	LOB
Drawing Size A1	**Checked By** DJC
Date 24/06/19	**Approved By** DJC

Drawing Number: 11054–002
Rev: B

APPENDIX C

TRICS Data (Multimodal)

Calculation Reference: AUDIT-109307-190621-0634

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 01 - RETAIL
Category : L - BUILDER'S MERCHANTS
MULTI-MODAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	KC	KENT	1 days
06	WEST MIDLANDS		
	WM	WEST MIDLANDS	1 days
	WO	WORCESTERSHIRE	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Secondary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Gross floor area
Actual Range: 5000 to 6275 (units: sqm)
Range Selected by User: 5000 to 6275 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/09 to 19/10/11

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	2 days
Wednesday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	3 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	1
Edge of Town	2

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Zone	2
Residential Zone	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

A1	3 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Secondary Filtering selection (Cont.):

Population within 1 mile:

10,001 to 15,000	1 days
15,001 to 20,000	1 days
25,001 to 50,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

50,001 to 75,000	1 days
100,001 to 125,000	1 days
500,001 or More	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	2 days
1.1 to 1.5	1 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Petrol filling station:

Included in the survey count	0 days
Excluded from count or no filling station	3 days

This data displays the number of surveys within the selected set that include petrol filling station activity, and the number of surveys that do not.

Travel Plan:

No	3 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	3 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 KC-01-L-01 TRAVIS PERKINS KENT
ENTERPRISE WAY
MARGATE
WESTWOOD
Edge of Town
Industrial Zone
Total Gross floor area: 6275 sqm
Survey date: MONDAY *07/12/09* *Survey Type: MANUAL*

2 WM-01-L-02 SELCO WEST MIDLANDS
CHARLOTTE ROAD
BIRMINGHAM
STIRCHLEY
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 5600 sqm
Survey date: WEDNESDAY *19/10/11* *Survey Type: MANUAL*

3 WO-01-L-02 JEWSON WORCESTERSHIRE
NAVIGATION ROAD
WORCESTER

Edge of Town
Industrial Zone
Total Gross floor area: 5000 sqm
Survey date: MONDAY *15/06/09* *Survey Type: MANUAL*

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 01 - RETAIL/L - BUILDER'S MERCHANTS
MULTI-MODAL VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
06:00 - 07:00	1	5600	0.375	1	5600	0.036	1	5600	0.411
07:00 - 08:00	3	5625	0.350	3	5625	0.219	3	5625	0.569
08:00 - 09:00	3	5625	0.658	3	5625	0.539	3	5625	1.197
09:00 - 10:00	3	5625	0.735	3	5625	0.747	3	5625	1.482
10:00 - 11:00	3	5625	0.640	3	5625	0.604	3	5625	1.244
11:00 - 12:00	3	5625	0.681	3	5625	0.575	3	5625	1.256
12:00 - 13:00	3	5625	0.527	3	5625	0.604	3	5625	1.131
13:00 - 14:00	3	5625	0.527	3	5625	0.658	3	5625	1.185
14:00 - 15:00	3	5625	0.468	3	5625	0.468	3	5625	0.936
15:00 - 16:00	3	5625	0.439	3	5625	0.427	3	5625	0.866
16:00 - 17:00	3	5625	0.296	3	5625	0.421	3	5625	0.717
17:00 - 18:00	3	5625	0.148	3	5625	0.255	3	5625	0.403
18:00 - 19:00	2	5300	0.245	2	5300	0.255	2	5300	0.500
19:00 - 20:00	1	5600	0.214	1	5600	0.357	1	5600	0.571
20:00 - 21:00	1	5600	0.000	1	5600	0.036	1	5600	0.036
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			6.303			6.201			12.504

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	5000 - 6275 (units: sqm)
Survey date date range:	01/01/09 - 19/10/11
Number of weekdays (Monday-Friday):	3
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 01 - RETAIL/L - BUILDER'S MERCHANTS
MULTI-MODAL TAXIS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
06:00 - 07:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
07:00 - 08:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
08:00 - 09:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
09:00 - 10:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
10:00 - 11:00	3	5625	0.006	3	5625	0.006	3	5625	0.012
11:00 - 12:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
12:00 - 13:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
13:00 - 14:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
14:00 - 15:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
15:00 - 16:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
16:00 - 17:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
17:00 - 18:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
18:00 - 19:00	2	5300	0.000	2	5300	0.000	2	5300	0.000
19:00 - 20:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
20:00 - 21:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.006			0.006			0.012

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 01 - RETAIL/L - BUILDER'S MERCHANTS
MULTI-MODAL OGVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
06:00 - 07:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
07:00 - 08:00	3	5625	0.018	3	5625	0.030	3	5625	0.048
08:00 - 09:00	3	5625	0.053	3	5625	0.041	3	5625	0.094
09:00 - 10:00	3	5625	0.071	3	5625	0.059	3	5625	0.130
10:00 - 11:00	3	5625	0.065	3	5625	0.071	3	5625	0.136
11:00 - 12:00	3	5625	0.089	3	5625	0.047	3	5625	0.136
12:00 - 13:00	3	5625	0.047	3	5625	0.077	3	5625	0.124
13:00 - 14:00	3	5625	0.030	3	5625	0.036	3	5625	0.066
14:00 - 15:00	3	5625	0.024	3	5625	0.024	3	5625	0.048
15:00 - 16:00	3	5625	0.030	3	5625	0.024	3	5625	0.054
16:00 - 17:00	3	5625	0.041	3	5625	0.036	3	5625	0.077
17:00 - 18:00	3	5625	0.006	3	5625	0.024	3	5625	0.030
18:00 - 19:00	2	5300	0.000	2	5300	0.009	2	5300	0.009
19:00 - 20:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
20:00 - 21:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.474			0.478			0.952

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 01 - RETAIL/L - BUILDER'S MERCHANTS
MULTI-MODAL PSVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
06:00 - 07:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
07:00 - 08:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
08:00 - 09:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
09:00 - 10:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
10:00 - 11:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
11:00 - 12:00	3	5625	0.006	3	5625	0.006	3	5625	0.012
12:00 - 13:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
13:00 - 14:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
14:00 - 15:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
15:00 - 16:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
16:00 - 17:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
17:00 - 18:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
18:00 - 19:00	2	5300	0.000	2	5300	0.000	2	5300	0.000
19:00 - 20:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
20:00 - 21:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.006			0.006			0.012

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 01 - RETAIL/L - BUILDER'S MERCHANTS
MULTI-MODAL CYCLISTS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
06:00 - 07:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
07:00 - 08:00	3	5625	0.006	3	5625	0.006	3	5625	0.012
08:00 - 09:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
09:00 - 10:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
10:00 - 11:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
11:00 - 12:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
12:00 - 13:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
13:00 - 14:00	3	5625	0.012	3	5625	0.006	3	5625	0.018
14:00 - 15:00	3	5625	0.000	3	5625	0.006	3	5625	0.006
15:00 - 16:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
16:00 - 17:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
17:00 - 18:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
18:00 - 19:00	2	5300	0.000	2	5300	0.000	2	5300	0.000
19:00 - 20:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
20:00 - 21:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.018			0.018			0.036

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 01 - RETAIL/L - BUILDER'S MERCHANTS
MULTI-MODAL VEHICLE OCCUPANTS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
06:00 - 07:00	1	5600	0.446	1	5600	0.036	1	5600	0.482
07:00 - 08:00	3	5625	0.474	3	5625	0.279	3	5625	0.753
08:00 - 09:00	3	5625	0.859	3	5625	0.658	3	5625	1.517
09:00 - 10:00	3	5625	0.913	3	5625	0.924	3	5625	1.837
10:00 - 11:00	3	5625	0.764	3	5625	0.723	3	5625	1.487
11:00 - 12:00	3	5625	0.764	3	5625	0.664	3	5625	1.428
12:00 - 13:00	3	5625	0.628	3	5625	0.729	3	5625	1.357
13:00 - 14:00	3	5625	0.646	3	5625	0.776	3	5625	1.422
14:00 - 15:00	3	5625	0.545	3	5625	0.557	3	5625	1.102
15:00 - 16:00	3	5625	0.527	3	5625	0.533	3	5625	1.060
16:00 - 17:00	3	5625	0.356	3	5625	0.521	3	5625	0.877
17:00 - 18:00	3	5625	0.172	3	5625	0.284	3	5625	0.456
18:00 - 19:00	2	5300	0.292	2	5300	0.349	2	5300	0.641
19:00 - 20:00	1	5600	0.214	1	5600	0.482	1	5600	0.696
20:00 - 21:00	1	5600	0.000	1	5600	0.054	1	5600	0.054
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			7.600			7.569			15.169

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 01 - RETAIL/L - BUILDER'S MERCHANTS
MULTI-MODAL PEDESTRIANS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
06:00 - 07:00	1	5600	0.018	1	5600	0.000	1	5600	0.018
07:00 - 08:00	3	5625	0.024	3	5625	0.000	3	5625	0.024
08:00 - 09:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
09:00 - 10:00	3	5625	0.018	3	5625	0.012	3	5625	0.030
10:00 - 11:00	3	5625	0.012	3	5625	0.006	3	5625	0.018
11:00 - 12:00	3	5625	0.018	3	5625	0.012	3	5625	0.030
12:00 - 13:00	3	5625	0.024	3	5625	0.018	3	5625	0.042
13:00 - 14:00	3	5625	0.006	3	5625	0.012	3	5625	0.018
14:00 - 15:00	3	5625	0.012	3	5625	0.018	3	5625	0.030
15:00 - 16:00	3	5625	0.018	3	5625	0.012	3	5625	0.030
16:00 - 17:00	3	5625	0.000	3	5625	0.024	3	5625	0.024
17:00 - 18:00	3	5625	0.006	3	5625	0.018	3	5625	0.024
18:00 - 19:00	2	5300	0.000	2	5300	0.009	2	5300	0.009
19:00 - 20:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
20:00 - 21:00	1	5600	0.000	1	5600	0.018	1	5600	0.018
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.156			0.159			0.315

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 01 - RETAIL/L - BUILDER'S MERCHANTS
MULTI-MODAL PUBLIC TRANSPORT USERS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
06:00 - 07:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
07:00 - 08:00	3	5625	0.012	3	5625	0.000	3	5625	0.012
08:00 - 09:00	3	5625	0.036	3	5625	0.006	3	5625	0.042
09:00 - 10:00	3	5625	0.012	3	5625	0.006	3	5625	0.018
10:00 - 11:00	3	5625	0.000	3	5625	0.006	3	5625	0.006
11:00 - 12:00	3	5625	0.006	3	5625	0.018	3	5625	0.024
12:00 - 13:00	3	5625	0.006	3	5625	0.000	3	5625	0.006
13:00 - 14:00	3	5625	0.006	3	5625	0.006	3	5625	0.012
14:00 - 15:00	3	5625	0.006	3	5625	0.006	3	5625	0.012
15:00 - 16:00	3	5625	0.000	3	5625	0.000	3	5625	0.000
16:00 - 17:00	3	5625	0.000	3	5625	0.012	3	5625	0.012
17:00 - 18:00	3	5625	0.000	3	5625	0.006	3	5625	0.006
18:00 - 19:00	2	5300	0.000	2	5300	0.000	2	5300	0.000
19:00 - 20:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
20:00 - 21:00	1	5600	0.000	1	5600	0.054	1	5600	0.054
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.084			0.120			0.204

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 01 - RETAIL/L - BUILDER'S MERCHANTS
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
06:00 - 07:00	1	5600	0.464	1	5600	0.036	1	5600	0.500
07:00 - 08:00	3	5625	0.516	3	5625	0.284	3	5625	0.800
08:00 - 09:00	3	5625	0.895	3	5625	0.664	3	5625	1.559
09:00 - 10:00	3	5625	0.942	3	5625	0.942	3	5625	1.884
10:00 - 11:00	3	5625	0.776	3	5625	0.735	3	5625	1.511
11:00 - 12:00	3	5625	0.788	3	5625	0.693	3	5625	1.481
12:00 - 13:00	3	5625	0.658	3	5625	0.747	3	5625	1.405
13:00 - 14:00	3	5625	0.670	3	5625	0.800	3	5625	1.470
14:00 - 15:00	3	5625	0.563	3	5625	0.587	3	5625	1.150
15:00 - 16:00	3	5625	0.545	3	5625	0.545	3	5625	1.090
16:00 - 17:00	3	5625	0.356	3	5625	0.557	3	5625	0.913
17:00 - 18:00	3	5625	0.178	3	5625	0.308	3	5625	0.486
18:00 - 19:00	2	5300	0.292	2	5300	0.358	2	5300	0.650
19:00 - 20:00	1	5600	0.214	1	5600	0.482	1	5600	0.696
20:00 - 21:00	1	5600	0.000	1	5600	0.125	1	5600	0.125
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			7.857			7.863			15.720

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

APPENDIX D

TRICS Data (Vehicular)

Calculation Reference: AUDIT-109307-190621-0611

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 01 - RETAIL
Category : L - BUILDER'S MERCHANTS
VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	KC	KENT	1 days
05	EAST MIDLANDS		
	LN	LINCOLNSHIRE	2 days
06	WEST MIDLANDS		
	WM	WEST MIDLANDS	1 days
	WO	WORCESTERSHIRE	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Secondary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Gross floor area
Actual Range: 5000 to 12966 (units: sqm)
Range Selected by User: 600 to 12966 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/09 to 11/06/13

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	3 days
Tuesday	1 days
Wednesday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	5 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town Centre	2
Suburban Area (PPS6 Out of Centre)	1
Edge of Town	2

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Zone	2
Commercial Zone	1
Residential Zone	1
Built-Up Zone	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

A1	5 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

10,001 to 15,000	1 days
15,001 to 20,000	3 days
25,001 to 50,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

25,001 to 50,000	1 days
50,001 to 75,000	2 days
100,001 to 125,000	1 days
500,001 or More	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	2 days
1.1 to 1.5	3 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Petrol filling station:

Included in the survey count	0 days
Excluded from count or no filling station	5 days

This data displays the number of surveys within the selected set that include petrol filling station activity, and the number of surveys that do not.

Travel Plan:

No	5 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	5 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 KC-01-L-01 TRAVIS PERKINS KENT
ENTERPRISE WAY
MARGATE
WESTWOOD
Edge of Town
Industrial Zone
Total Gross floor area: 6275 sqm
Survey date: MONDAY *07/12/09* *Survey Type: MANUAL*

2 LN-01-L-01 JEWSON LINCOLNSHIRE
WHARF ROAD
GRANTHAM

Edge of Town Centre
Built-Up Zone
Total Gross floor area: 6020 sqm
Survey date: MONDAY *15/11/10* *Survey Type: MANUAL*

3 LN-01-L-02 JACKSON BUILDING CENTRE LINCOLNSHIRE
SOUTH PARADE
GRANTHAM

Edge of Town Centre
Commercial Zone
Total Gross floor area: 13051 sqm
Survey date: TUESDAY *11/06/13* *Survey Type: MANUAL*

4 WM-01-L-02 SELCO WEST MIDLANDS
CHARLOTTE ROAD
BIRMINGHAM
STIRCHLEY
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total Gross floor area: 5600 sqm
Survey date: WEDNESDAY *19/10/11* *Survey Type: MANUAL*

5 WO-01-L-02 JEWSON WORCESTERSHIRE
NAVIGATION ROAD
WORCESTER

Edge of Town
Industrial Zone
Total Gross floor area: 5000 sqm
Survey date: MONDAY *15/06/09* *Survey Type: MANUAL*

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 01 - RETAIL/L - BUILDER'S MERCHANTS
VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	1	5600	0.000	1	5600	0.000	1	5600	0.000
06:00 - 07:00	3	7862	0.127	3	7862	0.008	3	7862	0.135
07:00 - 08:00	5	6972	0.318	5	6972	0.209	5	6972	0.527
08:00 - 09:00	5	6972	0.531	5	6972	0.410	5	6972	0.941
09:00 - 10:00	5	6972	0.499	5	6972	0.513	5	6972	1.012
10:00 - 11:00	5	6972	0.496	5	6972	0.456	5	6972	0.952
11:00 - 12:00	5	6972	0.499	5	6972	0.450	5	6972	0.949
12:00 - 13:00	5	6972	0.407	5	6972	0.459	5	6972	0.866
13:00 - 14:00	5	6972	0.402	5	6972	0.465	5	6972	0.867
14:00 - 15:00	5	6972	0.376	5	6972	0.387	5	6972	0.763
15:00 - 16:00	5	6972	0.327	5	6972	0.336	5	6972	0.663
16:00 - 17:00	5	6972	0.232	5	6972	0.347	5	6972	0.579
17:00 - 18:00	5	6972	0.075	5	6972	0.175	5	6972	0.250
18:00 - 19:00	2	5300	0.245	2	5300	0.255	2	5300	0.500
19:00 - 20:00	1	5600	0.214	1	5600	0.357	1	5600	0.571
20:00 - 21:00	1	5600	0.000	1	5600	0.036	1	5600	0.036
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			4.748			4.863			9.611

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	5000 - 12966 (units: sqm)
Survey date date range:	01/01/09 - 11/06/13
Number of weekdays (Monday-Friday):	5
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.